

**Mahabharata Re-told with
Scientific Evidences
by Saroj Bala**



ABSTRACT ONLY

Mahabharat Retold with Scientific Evidences

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Abstract

Entire ancient history, revealed through Vedas and Epics, is capable of being re-constructed scientifically with accuracy by making use of modern scientific tools and technologies, which include planetarium software. The astronomical references of Rigveda could be observed in the sky between 7000 BCE and 5000 BCE, whereas those of Ramayan could be observed sequentially around 5100 BCE. The astronomical references of Mahabharat pertain to the sky views observed sequentially between 3153 BCE and 3102 BCE. For arriving at these dates, following approach & methodology were adopted –

- More than one lakh slokas contained in nine volumes of Mahabharat (Parimal Publications) were scrutinized and astronomical references were extracted sequentially. Only those which were found in Critical Edition as well were identified for sequential dating. All translations were redone with the help of Sanskrit scholars and referring to dictionaries as some of the traditional translations were found to be not fully correct.
- Astronomical references from Sabha parva, VanaParva, Udyog Parva, BhishmaParva, Shalya Parva, Shanti Parva, and MausalaParva have been dated sequentially by making use of Planetarium software (Fogware). The internal consistency of astronomical dates with the text of Mahabharata was ensured. Astronomical dates calculated by almost all the scholars during last 130 years were analysed with respect and genuine efforts were made to provide the missing links and to make the dating more comprehensive.
- VanaParva of Mahabharat reveals that in Mahabharat days asterisms were being counted from Rohini as equinox was on that. Astronomically there is precession of equinox by one degree in 72 years. Today Spring equinox is in 3rd quarter of PurvaBhadrapad Asterism; thus equinox has moved by more than 5.25 nakshatras (Krttika, Bharani, Asvini, Revati, and Uttara Bhadrpad) since this reference in Mahabharata. This means that more than 5040 years (960 X 5.25) have passed. This took our research period for dating of Mahabharata references to 4000 BC – 3000 BC).
- A more accurate translation of all the relevant *slokas* of chapters 2 and 3 of BhishmaParva, had enabled such accurate depiction of sequential sky views, which should be able to set at rest all controversies regarding the dating of Mahabharat war. Sky view of 19th December, 3139 BC, depicting *Magh Shukla Saptami*, a day before Bhishma's demise and of September 14, 3139 BC, depicting all astronomical references of BhishmaParva observed six hours before solar eclipse of Kartik month are most exclusive, which do not get repeated on any other date; not even around 3067 BC, 1792 BC or 1472 BC.
- Eleven sequential sky views covering a period of 52 years from 3153 BC to 3101 BC have been generated, using planetarium software (Fogware), which exactly match the descriptions in Mahabharat, are internally consistent and sequentially accurate. Evidences from archaeology, archaeobotany, palynology, oceanography, remote sensing and genetic studies have corroborated this date sequence of events recorded in Mahabharat. The kingdoms which supported Pandavas and Kauravas during Mahabharat war, have been plotted on the Map, which reveals that entire Greater India was involved in this war. This map also certifies the existence of *Bharatvarsha* as a Nation with defined boundaries for more than 5000 Years.
- A List of some important sequential sky views generated along with the dates on which these are recorded as observed at the time of important events narrated in Mahabharat is given below. The list contains dates of Planetarium and Stellarium Skyviews and relevant references of Mahabharat text. References are from 'Mahabharat' of Parimal Prakashan (2008 Edition, 9 volumes) translated by M N Dutt, edited by Dr. Ishwar Chandra Sharma and Dr. O N Bimali; all these are also included in critical edition 'The Mahabharat' by Vishnu S. Sukthankar. The reasons for certain discrepancies like observation of Solar Eclipse during night time or difference of 26 days in Stellarium and Planetarium skyviews have been given below this list.

Dates of Planetarium and Stellarium depicting the same skyviews	Astronomical Reference in Mahabharat	Description of Event at the time of Sky view
<u>Planetarium:</u> Nov. 18, 3153 BCE, 23:50 hrs. / Hastinapur (Meerut)	Mahabharat Sabha Parva 2/80/29	Solar eclipse observed when Pandavas were leaving Hastinapur for 13 years of exile after losing in the game of dice. War started after 14 years appx.
<u>Stellarium:</u> Dec. 15, 3153 BCE, 01:42 hrs.		

<u>Planetarium:</u> Aug. 31, 3139 BCE, 11:10 hrs. / Hastinapur <u>Stellarium:</u> Sep. 27, 3139 BCE, 12:42 hrs./ Hastinapur	Bhishmaparva 6/2/23	Lunar eclipse on first Purnima of Kartik Month, followed by solar eclipse within 14 days; foreboding widespread destruction before war
<u>Planetarium:</u> Sep. 14, 3139 BCE 22:15 hrs. / Hastinapur <u>Stellarium:</u> Oct. 11, 3139 BCE, 01:50 hrs / Hastinapur	Bhishmaparva 6/2/23 & 6/3/28-32	Near Solar eclipse observed within 14 days of lunar eclipse in Kartik month. There was tithikshaya on 12 th September as on 11 th September phase difference between the positions of Sun and Moon becoming integral of multiple of 12 at the time of Sunrise on Ekadashi i.e 11 th September was 10.902 whereas on next day it was 12.08. Thus there was tithikshaya of dwadashi and next day was tryodashi. On next <i>Amavasya of Margshisha month</i> , Mahabharat war actually started.
<u>Planetarium:</u> Sept. 14, 3139 BCE 18:20 hrs. / Hastinapur <u>Stellarium:</u> Oct. 10, 3139 BCE, 19:50 hrs / Hastinapur	Bhishmaparva. 6/3/14 -18	On 14 th September, almost all the positions of stars and planets, described in chapter 3 of BhishmaParva, could be observed in the sky. Mars entering its own house Aries in Vakragati, Saturn in Scorpius is afflicting 10 th constellation Uttarphalguni in Leo. Venus in Virgo is aspecting PoorvaBhadrapad and Uttarbhadrapad in seventh constellation Pisces. Both Sun and Moon in Scorpius are afflicting Rohini in Taurus, Venus is between Chitra and Swati whereas Shrawan is going around Shrawan in Brahmrashmi i.e. Capricornus.
<u>Planetarium:</u> Sep. 25, 3139 BCE, 6:10 hrs. Dwarka <u>Stellarium:</u> Oct. 22. 3139 BCE, 00:30 hrs.	UdyogParva 5/83/6-7	Lord Krishna leaves for last peace mission in Kartika month, RevatiNakshtra. He leaves from Dwarka and takes about three days to reach Hastinapur.
<u>Planetarium:</u> Oct. 3. 3139 BC, 6:10 hrs. / Hastinapur <u>Stellarium:</u> Oct. 30, 3139 BC, 5:30 hrs	ShalyaParva 9/34/5-6,	After failure of Krishna's peace mission, Balram leaves for pilgrimage in PushyaNakshtra. 3-4 days later, Krishna tells Karna that war could begin on next Amavasya.
Oct. 13, 3139 BCE, 8:30 hrs. / Hastinapur <u>Stellarium:</u> Nov. 9, 3139 BCE, 6:15 hrs	UdyogParva 5/142/17-18	Shri Krishna imparts Gita-updesh to Arjun. This is Amavasya after 13 days of last Kartik Purnima, moon near Jyeshtha, which is presided over by Lord Indra (Scorpius / vrishchika). War started after the failure of Sri Krishan's last peace mission.
Nov. 14, 3139 BCE 06:50 hrs. / Kurukshetra <u>Stellarium:</u> Dec. 10, 3139 BCE, 06:15 hrs	ShalyaParva 9/34/5-7	With Shalya's fall war came to an end on 31st October. Duryodhan went into hiding in Dvaipayana lake. Pandavas could locate him only after 12-13 days. Balram comes back after 42 days in ShrawanaNakshatra. Duryodhana gets killed in Gadayuddha with Bhim
Dec. 19, 3139 BCE 07:20 hrs. / Kurukshetra <u>Stellarium:</u> Jan 14, 3138 BCE, 15:00 hrs	AnushasanParva 13/167/26-28	Occurrence of Winter Solstice on Magh Shukla Saptmi. Next day on Magh Ashtami was Bhishma's demise. This was 68th day after beginning of the war on 13thOct.
March 3, 3102 BCE 10:30 hrs. / Dwarka <u>Stellarium:</u> March 29, 3102 BCE 14:35 hrs.	Mausalaparva 16/2/18-19	Solar Eclipse on 13th tithi after Purnima again in the 36th year of war indicating; annihilation of Yadavas and destruction of Dwarka, proving Gandhari's curse true
Jan. 20, 3101 BC 9:15 hrs / New Delhi <u>Stellarium:</u> Feb. 15, 3101 BC 15:00 hrs	Sabha Parva 2/1//19-91; Dasagitika/3	<i>Spectacular assemblage of Sun, Moon & Five Planets around Aries when Kali era Began 37 years after the Mahabharat war</i>

{[Note: Readers may ask a very pertinent question: why lunar eclipses are being shown during day time whereas solar eclipses are being depicted during night time when Sun is not even above the horizon. NASA has provided a very convincing answer to this question (<https://eclipse.gsfc.nasa.gov/SEhelp/uncertainty2004.html>). NASA Eclipse Skyguide has given chart of uncertainties in

DeltaT i.e. ΔT , clearly stating that there are bound to be inaccuracies in depicting the timings and longitudes of eclipse paths which occurred prior to 1600 CE. Based on the chart prepared by Morrison and Stephenson, a series of parabolic expressions have been derived, estimating uncertainties of time or in the longitudes of eclipse paths which occurred during the interval 2000 BCE to 3000 CE.

Table 3 - Uncertainty of ΔT (estimated)		
Year	σ	Longitude
	(seconds)	
-4000	16291	67.9°
-3500	12378	51.6°
-3000	8978	37.4°
-2500	6094	25.4°
-2000	3732	15.6°
-1500	1900	7.9°
-1000	622	2.6°

Thus an eclipse which occurred 4000 years back, the software could depict the same up to time difference of 16291 seconds i.e. 11: 31 hrs. Thus solar eclipses of Mahabharat times listed above, which software is depicting during night time, might have actually been observed during the day time and lunar eclipses listed above in daytime, might have been actually been observed during night time. DeltaT is the difference between Terrestrial Time and Universal Time (Rotational time), which have been adopted as fixed as per certain norms. However, actually the Universal time can vary on several occasions due to several factors like earthquakes, high tides, volcanic eruptions etc.

SAO/NASA Astrophysics Data System has also recorded the observations that Moon displays oscillations from two unknown sources, one within a period between 250-300 years with a co-efficient of 15'' to 20'' and the other within a period between 60 to 70 years with a co-efficient of some 3''. These and many other factors, like the mean latitude of the Moon may not be zero, might lead to differences in observations of eclipses recorded thousands of years back and theoretical recordings based on fixed and pre-determined parameters. Therefore it is possible that Solar Eclipse on 14th September, 3139 BCE was actually observed at that time, but the software displays the Moon going from near the Sun.

We also need to take note of the fact that neither Dr. R N Iyengar nor Shri Narhari Achar have displayed the actual eclipses; they have only taken the years compatible for double/triple eclipses. They have also taken note of the uncertainties in time and location for observation of thousands of years old eclipses

It will not be out of place to mention that Stellarium displays all these skyviews 26 Days later (+/- one day). This difference is due to non adjustment of 1 day for 131 years for pre-Gregorian reform period ($3425/131=26$) by Planetarium software.}}

Note: References are from 'Mahabharat' of ParimalPrakashan (2008 Edition) translated by M N Dutt, edited by Dr. Ishwar Chandra Sharma and Dr. O N Bimali; all these are also included in critical edition 'The Mahabharat' by Vishnu S. Sukthankar.

Keywords: Sarojbala, Shri Krishna, Shri Ram, Mahabharat, Bhagvadgita, Ramayan, Pandu, Pandavas, Kunti, Yudhishtir, Bhim, Arjun, Nakul, Sahadev, Kuru, Draupadi, Kauravas, Dhritarashtra, Gandhari, Duryodhan, Bhishma, Dronacharya, Dr. A P J Abdul Kalam, Sukthankar, Hastinapur, Indraprastha, Kurukshetra, Dwarika, MatsyaDesh, Kamyaka forest, GandhamadanParvat, EkchakraNagri, Rakhigarhi, Bhirrana, Kunal, Sarasvati, Lahuradeva, Jhussi, Sabha parva, VanaParva, Udyog Parva, BhishmaParva, Shalya Parva, Shanti Parva, StriParva, AnushasanParva, MausalaParva, Tithi, Nakshatras, asterism, planets, equinox, sky-view, Planetarium software, Astronomical, solar eclipse, lunar eclipse, archaeology, archaeobotany, palynology, oceanography, remote sensing, genetic studies, Gandiv, astras, sastras, Mace, Terracotta, Gandhara, Kamboja, Matsya, Surasena, Kuru, Panchala, Avanti, Chedi, Vatsa, Kasi, Kosala, Malla, Magadha, Vriji, Anga, Asmaka, Yadus,

Full Paper

Did Lord Krishna actually recite the profound philosophy of Gita to Arjun from the battlefield of Kurukshetra? Did the land of Kurukshetra actually turn red with the blood of millions of warriors who were killed during that historic war? If yes, then where, when and in which year?

About 5200 years back Vichitravirya, the son of Raja Shantanu, was coronated as the king of Hastinapur. He was married to Ambika and Ambalika, two daughters of King Kashiraj. Vichitravirya thereafter died very soon. In order to save the Kuru Dynasty from extinction and with the permission of mother Satyawati, Ambika bears a son through Sage Vyas who is named as Dhritarashtra whereas Ambalika bears a son named Pandu.

Since Dhritarashtra was blind from birth, he was considered unfit for the throne; therefore, Pandu is coronated as the king of Hastinapur. For this reason, Dhritarashtra nurtured resentment against Pandu from the very beginning. King Pandu expanded the boundaries of Kuru kingdom through multiple victories but there after he handed over the Throne to Dhritarashtra and went to live the life of an ascetic along with his two wives Kunti and Madri. King Pandu was blessed with five sons – Yudhishthir, Bhim, Arjun, and Nakul & Sahadev. Dhritarashtra was married to Gandhari who gave birth to many sons; the eldest was named Duryodhan.

Maharishi Dronacharya was appointed as the teacher for both Kuru and Pandu princes. For doing well in every competition, Pandava princes were generally appreciated which generated a lot of jealousy among in the hearts of Kuru princes. For this very reason, Duryodhan attempted to kill Pandu princes through deceit but all such attempts remained unsuccessful. Since Yudhishthir was the eldest of Pandu and Kuru princes and was also very accomplished, talented and admired by the public, he was declared as the Crown Prince of Hastinapur.

Out of jealousy and frustration, Duryodhan and his Shakuni mama hatched a conspiracy to send all Pandavas to Varanavat and then burn them alive in Lakshagrih i.e. a house built with highly inflammable material by Purochan. However, Pandavas saved their lives by escaping through a tunnel alongwith mother Kunti. They reached EkchakraNagri and started living with a Brahmin. After some years, Pandavas went to participate in the Swayamvara of Draupadi, the princess of Panchala. Her brother, Dhritadyumna had announced that anyone who shoots the target with the five arrows through the five holes of the Yantra over which the target was kept would have Draupadi as his wife. Arjun won the archery contest and won Draupadi as his wife. On reaching Ekchakra Nagri, Arjun announced to his mother that he had won the “prize,” Kunti told him to share that prize with his brothers, without seeing Draupadi. Like an irrevocable vow, her statement, even by mistake, could not be undone, so all five brothers married Draupadi, the daughter of King Drupada.

Back in Hastinapur, Dhritarashtra had declared Duryodhana as the Crown Prince presuming that all Pandava brothers had died alongwith their mother Kunti in VaranavatLakshagrih. After learning about Pandava’s victory during DraupadiSwayamvara, Dhritarashtra invited them to Hastinapur along with their mother Kunti and wife Draupadi. On being persuaded by Bhishma Pitamah and King Dhritarashtra, Duryodhan handed over deserted region of Khandav Van as half the kingdom to Yudhishthira, who accepted the offer in the hope of averting a war. Thereafter, with the help of Vishvakarma and Maya Danav, the Pandavas built a great city named Indraprastha along with its grand palace.

Duryodhan could not digest this prosperity of Pandavas; he invited them to a game of dice with the intention of winning their kingdom through deceit. Yudhishthira lost everything, his wealth, his kingdom and even Draupadi in this game of dice. Dushasan dragged Draupadi in to Kuru Darbar, Karna, still stinging from his rejection at the *swayamvara*, called her a harlot who serviced five men. Enraged at this treatment of his wife, Bhim vowed that he would one day drink Duhsasana’s blood and break Duryodhana’s thigh. The wicked Kauravas even tried to disrobe Draupadi in front of the entire Raj Darbar, but her honour was saved by Lord Krishna who miraculously created lengths of cloth to replace the ones being removed.

After having lost in the game of dice, the Pandavas were required to go into exile for 12 years, and live incognito in the 13th year; if discovered by the Kauravas, they would be sent into exile for another 12 years. As they were leaving Hastinapur, there were many ill omens and a solar eclipse was also seen as per references in Sarga 80 of Sabha Parva (2/80/29). This eclipse was seen on 20th Oct. 3153 BC (10:25 hrs) from Hastinapur (29° N, 77° E) –

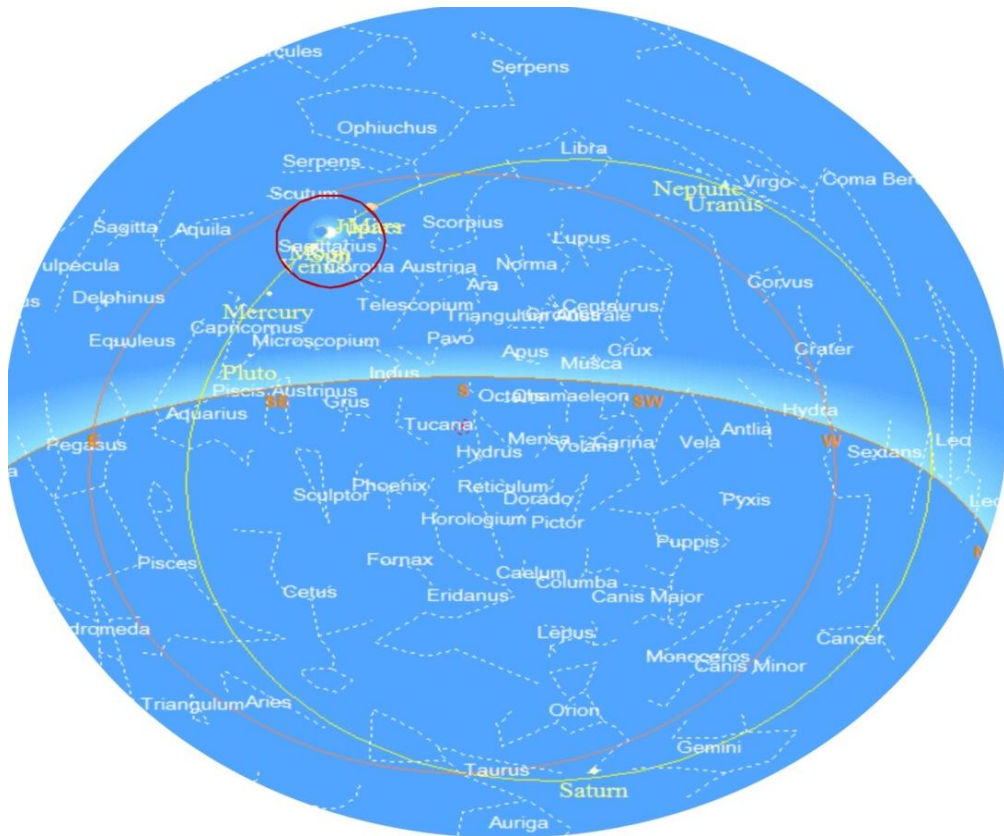


Figure 1: Solar eclipse as seen on 20th Oct. 3153 BC (10:25 hrs) from Hastinapur (29°N, 77°E)

Solar eclipse as seen on 18th November, 3153 BC (23:55 hrs) from Hastinapur (29°N, 77°E)

chariot driver. Accepting Draupadi's suggestion, prince Uttar took Arjun as his charioteer; Arjun defeated Duryodhana's forces and repulsed the attack on Virat's kingdom.

After this Victory, the true identity of Pandavas got revealed. Consequently King Virata offered his daughter [Uttarā](#)'s hand to Abhimanyu, son of Arjun through Subhadra, sister of Lord Krishna. The wedding was celebrated in style; the Kings from all over the Indian sub-continent assembled in Viratanagar to attend this marriage. Apprehending that Duryodhana would not give back their kingdom to Pandavas, this occasion was also used to build alliances for augmenting military power in case war became inevitable.

Duryodhana refused to give their kingdom back to them, claiming that Arjun was identified one day before the completion of 13th year but neither Bhishma Pitamah nor Guru Drona agreed with him. Duryodhana even rejected Lord Krishna's proposal of giving them only five villages. The war thus became imminent and all efforts made to prevent war had failed. There are several references to dhoomketus, ulkapats, eclipses which forebode widespread destruction. There is a reference to very inauspicious lunar eclipse on Kartika Purnima followed by a solar eclipse on 13th day in *Sargatwo* and three of *BhishmaParva* (6/2/23, 6/3/14-18). This lunar eclipse was seen from Hastinapur (29°N, 77°E) on 31st August 3139 B.C. (11:10 hrs) on the first Purnima of Kartika month –

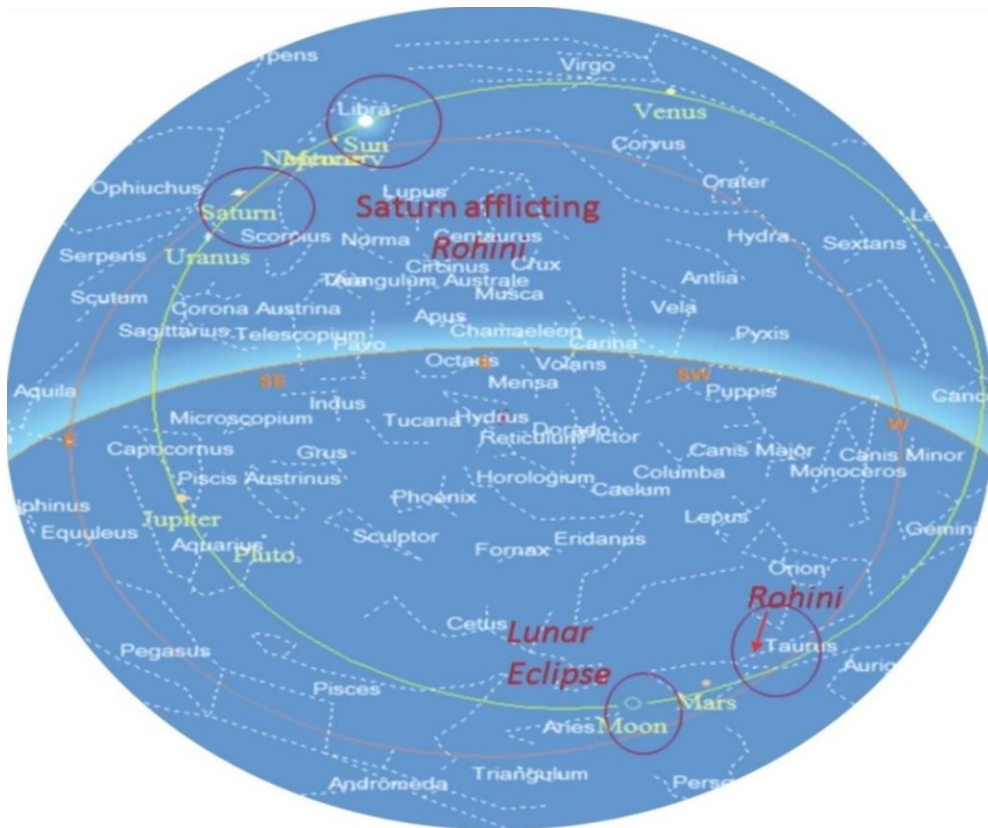
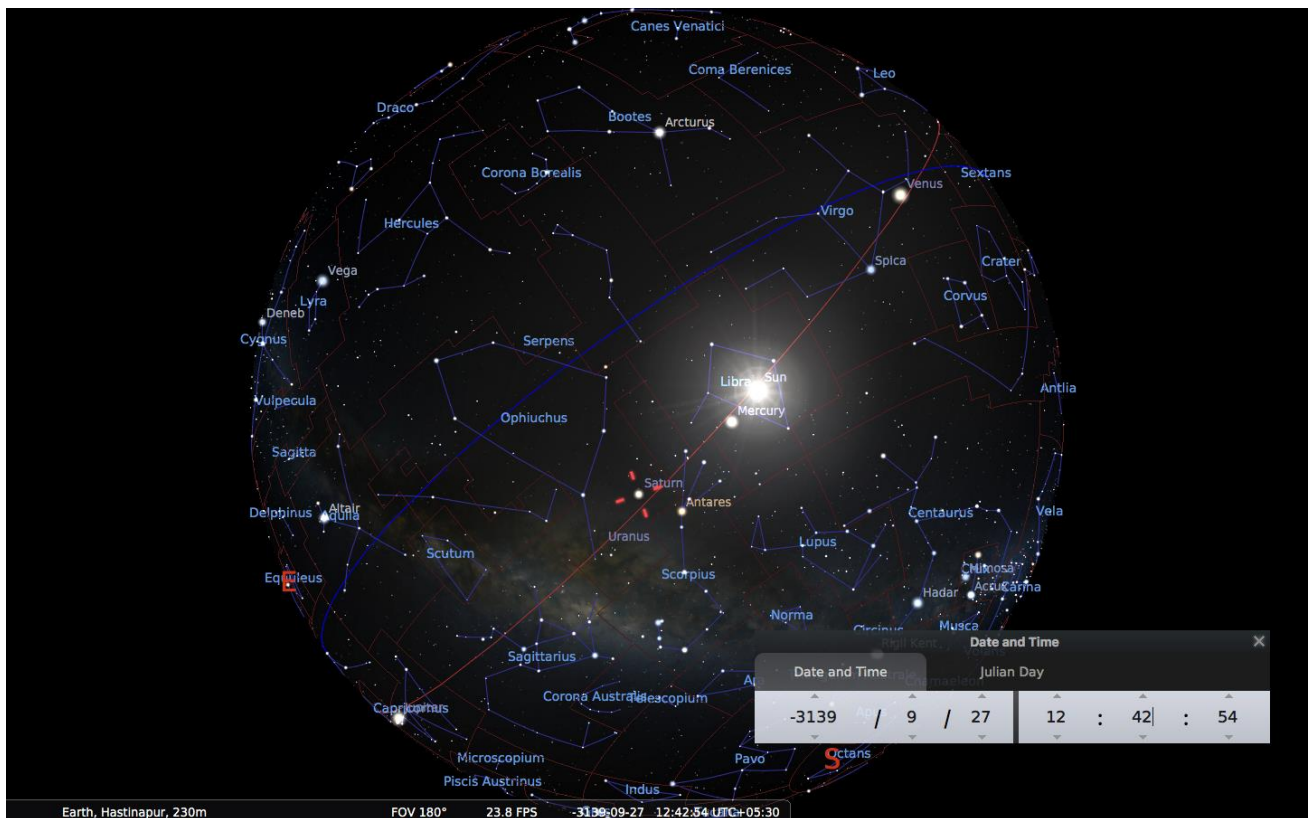
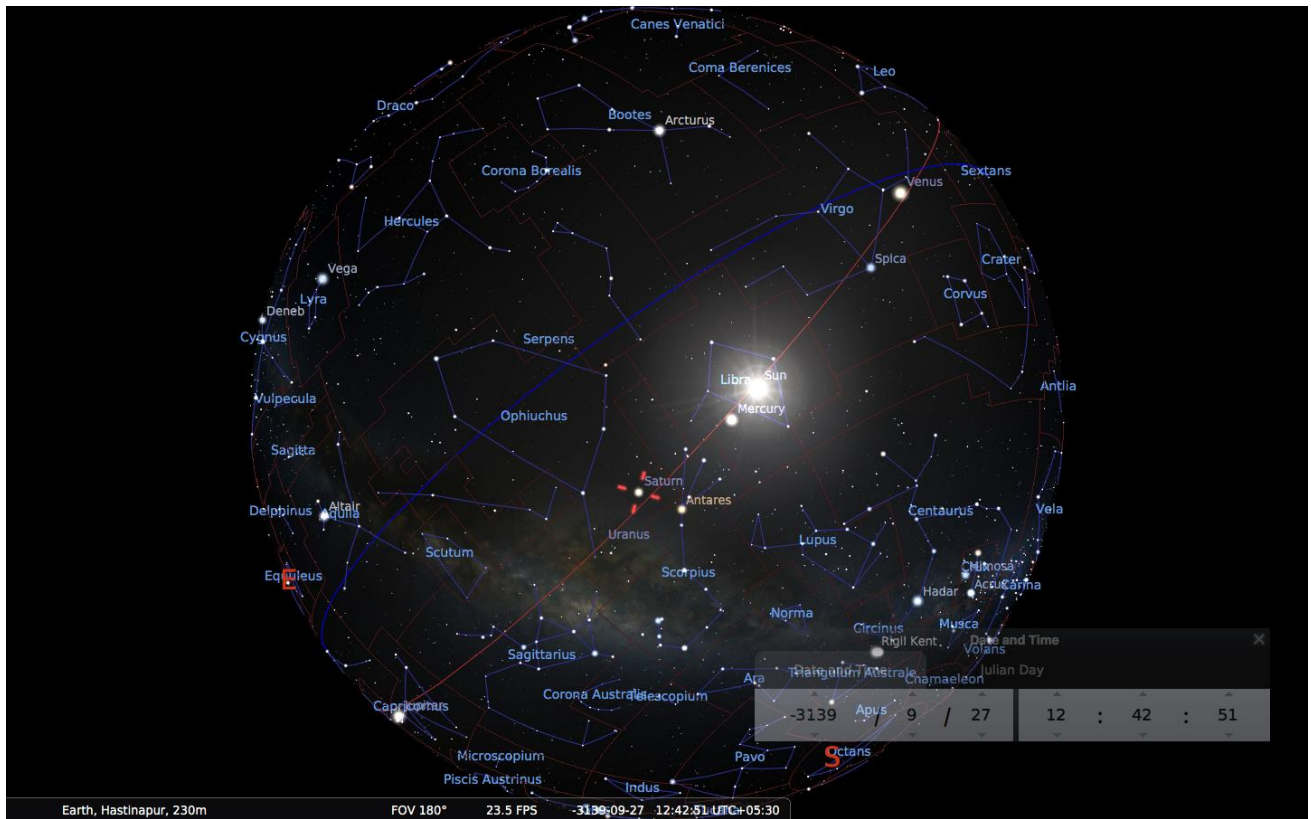
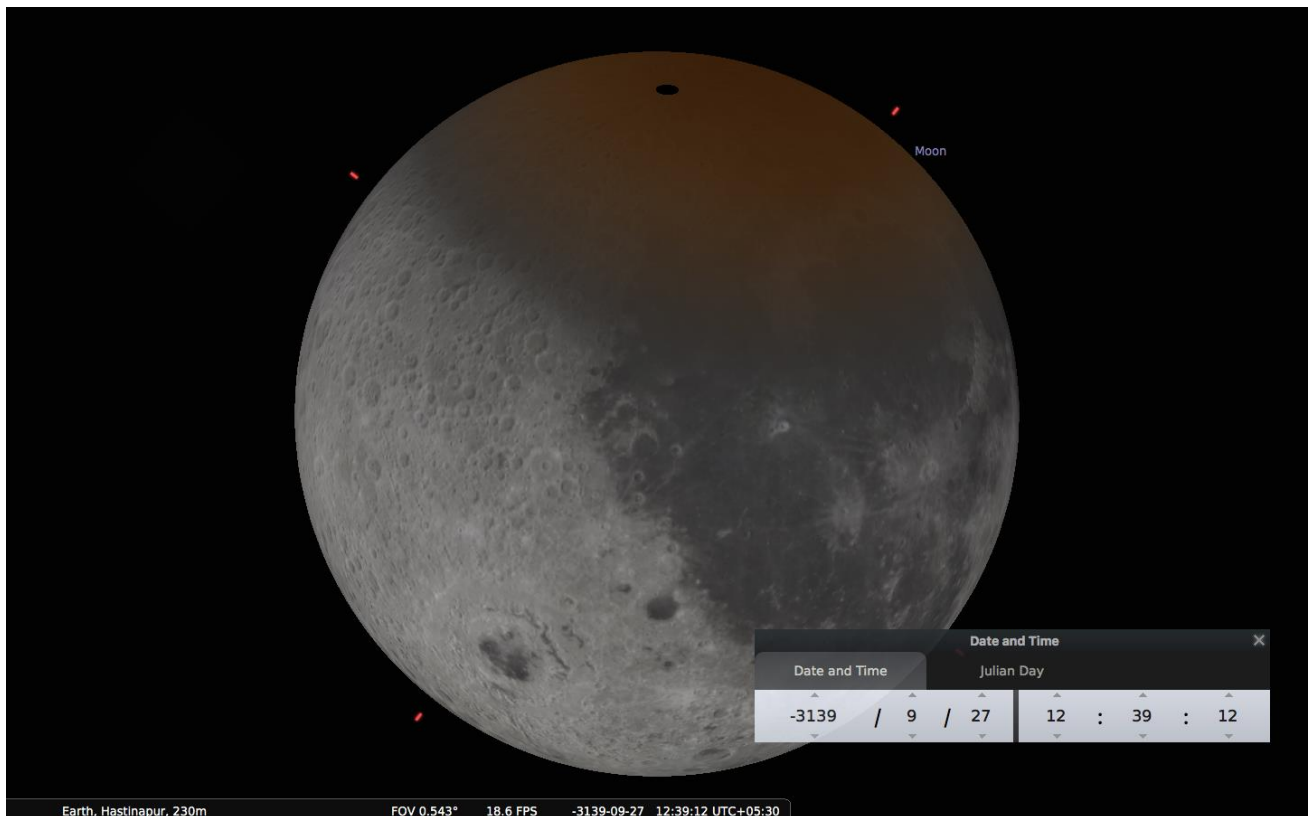
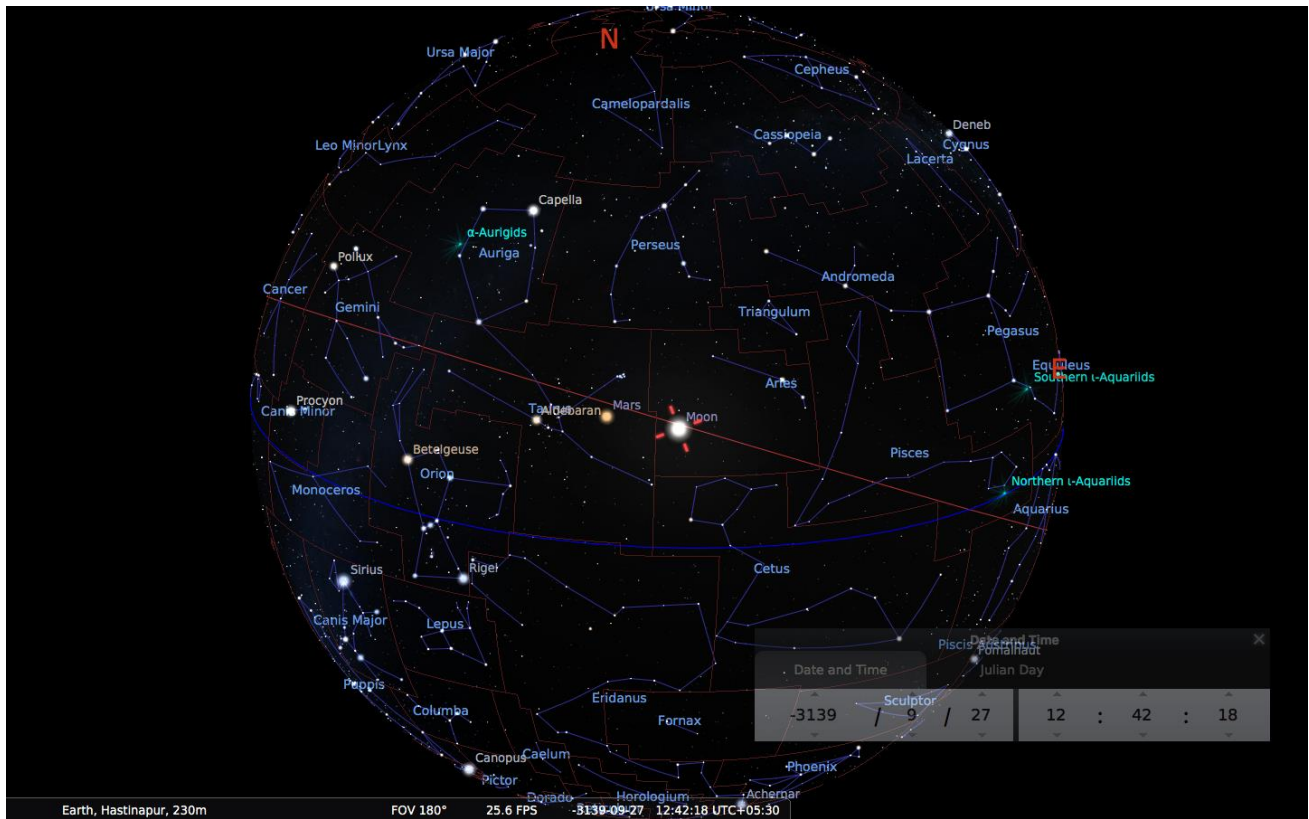


Figure 2: Lunar eclipse as seen from Hastinapur (29°N, 77°E) on 31st August 3139 B.C. (11:10 hrs) on the first Purnima of Kartika month





Corresponding view generated from *Stellarium 0.15.2* using NASA JPL DE431 ephemeris

On 14th September 3139 B.C., on Kartika Amavasya day a solar eclipse was also observed from Hastinapur. This was 13th lunar tithi as there was *tithikshaya* on 1-2 September and at the time of solar eclipse on 14th September new lunar

tithi had not begun. Reference here be also made to 6/3/32 , which states that a lunar fortnight has hitherto consisted of 14 days or 15 days or even of 16 days, but on the 13th day and in the course of same month two eclipses have taken place. See the sky-view depicting solar eclipse of 14th September, 3139 BC (22:15 hrs.) from Hastinapur (29°N, 77°E)-

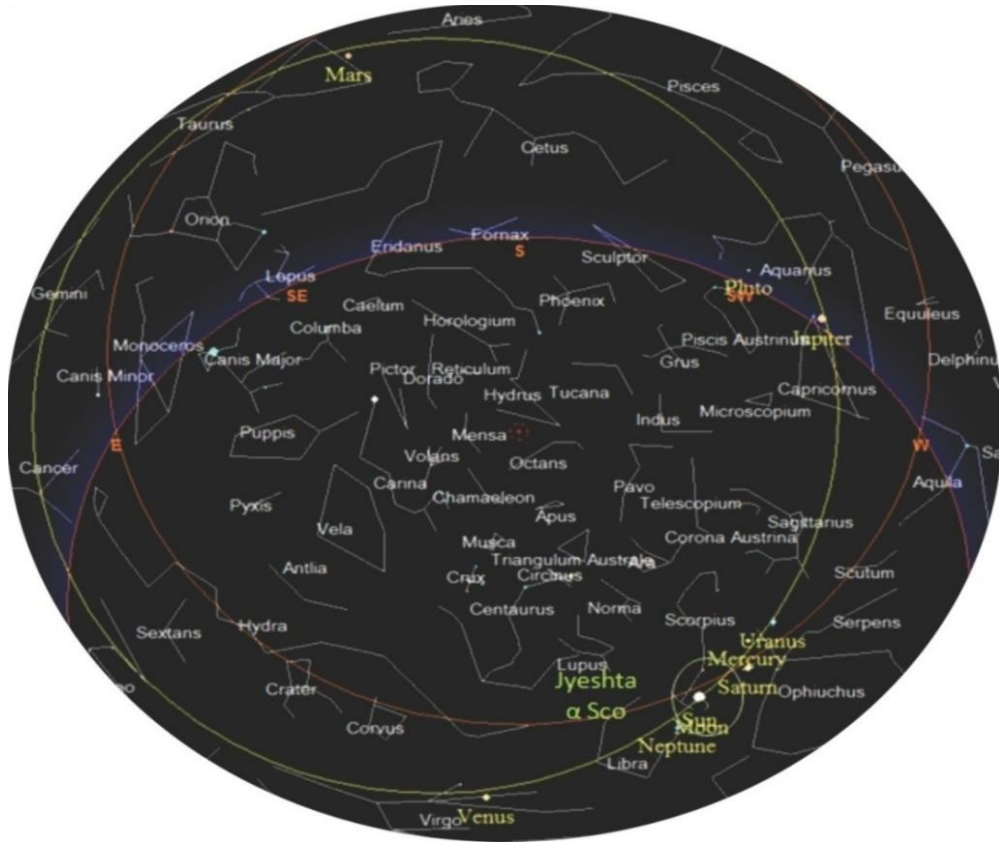
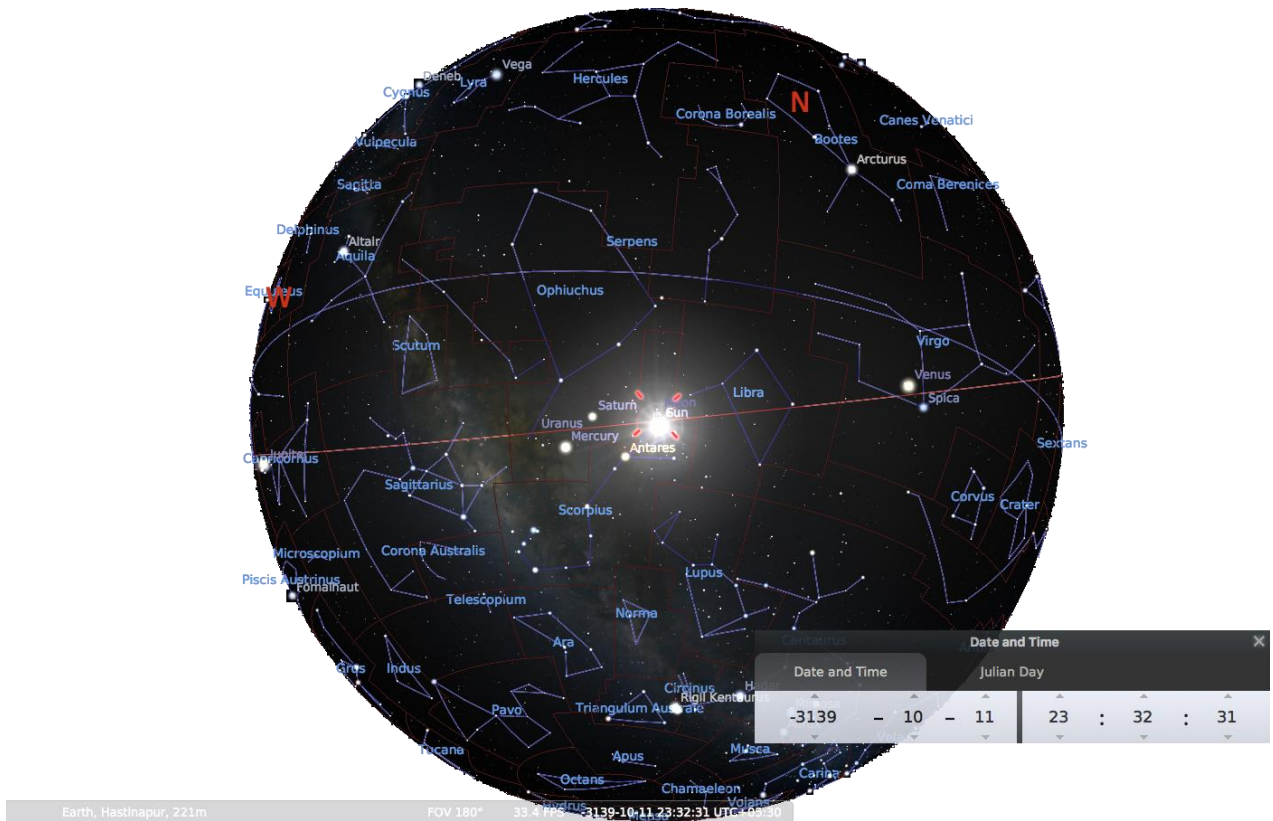


Figure 3: Sky-view depicting solar eclipse of 14th September, 3139 BC (22:15 hrs.) from Hastinapur (29°N, 77°E)



Corresponding view generated from *Stellarium 0.15.2* using NASA JPL DE431 ephemeris

In Sarga 3 of BhishmaParva, there are comprehensive details of locations and movements of various Planets and Nakshatras just before the solar eclipse. All these positions could be exactly seen in the sky just six hours before the solar eclipse on 14th September, 3139BC(18:30 hrs.) from Hastinapur (29°N, 77°E). The positions as narrated in Mahabharat are summarized as under –

- 6/3/14 – *Mangal* (Mars) is comfortable (i.e. magh) entering its own house i.e. *mesha*(Aries) in *Vakra*-gati (in backward motion) as it was in Taurus before 13th Sep 3139 BC. *Brihaspati*(Jupiter) is in *Shravan Nakshtra* (in Capricornus). Sun's offspring Shani (Saturn) is (in Scorpius) and is thus aspecing *Bhagham* i.e. *Uttar Phalguni*(in Leo) which is 10th constellation from Scorpius and is therefore in full aspect of Saturn.
- 6/3/15 - Shining brilliantly, the planet *Shukra* (Venus) is aspecing *Poorva Bhadrapada* & there after *Uttara Bhadrapada* (both in Pisces). On 14th Sep 3139 BC, Venus is situated in *kanya* (Virgo) and is thus aspecing 7th constellation from its location i.e. *MeenaRashi* (Pisces).
- 6/3/17 - Both Sun and moon are located in Scorpius, therefore they are afflicting *Rohini* (located just opposite in Taurus). *ParushGraha* i.e. *Shukra*(Venus) is located between between *Chitra* & *Swati* Asterisms and is thus located between *Kanya*(Virgo Constellation) and Tula (Libra).
- 6/3/18 - *Brihaspati* i.e. Jupiter (*Pavakprabha*) is going around *Shravana* in *Brahmaashii* i.e. *MakarRashi*(Capricornus); whereas *Vakra/Lohitangi* i.e. *Mangal* (Mars) in *Vakra-anuvakragati* (backward-forward motion) is looking stable/static.

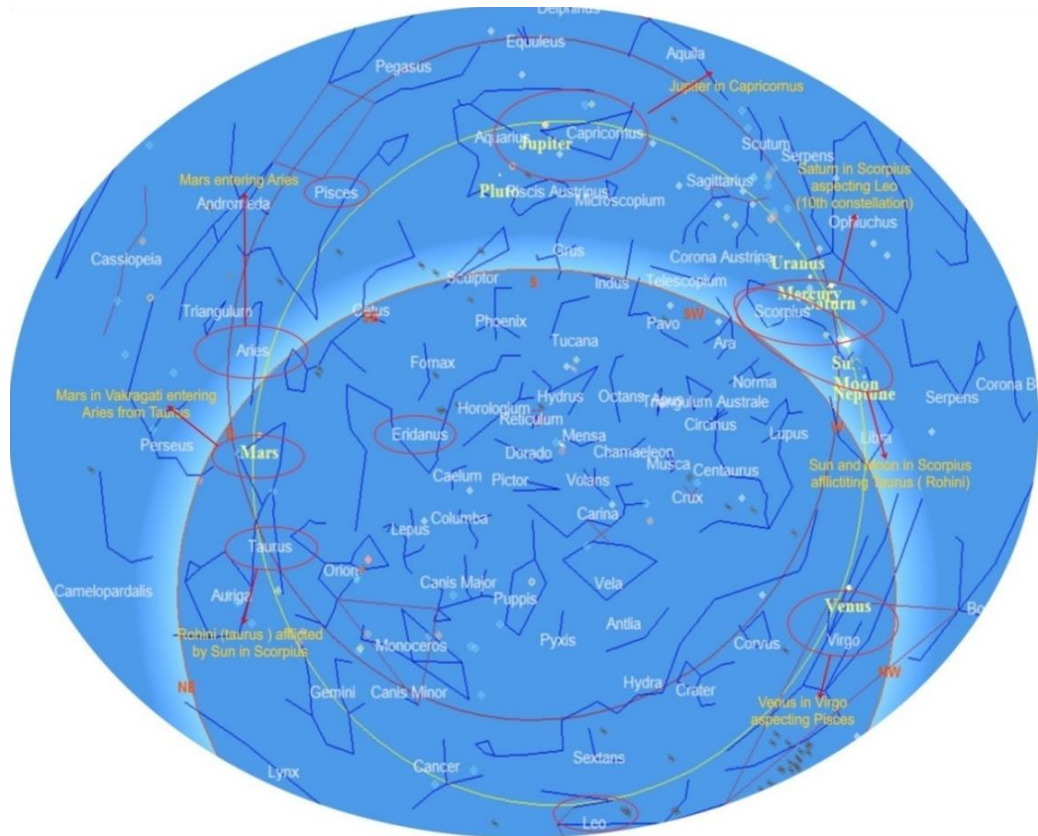
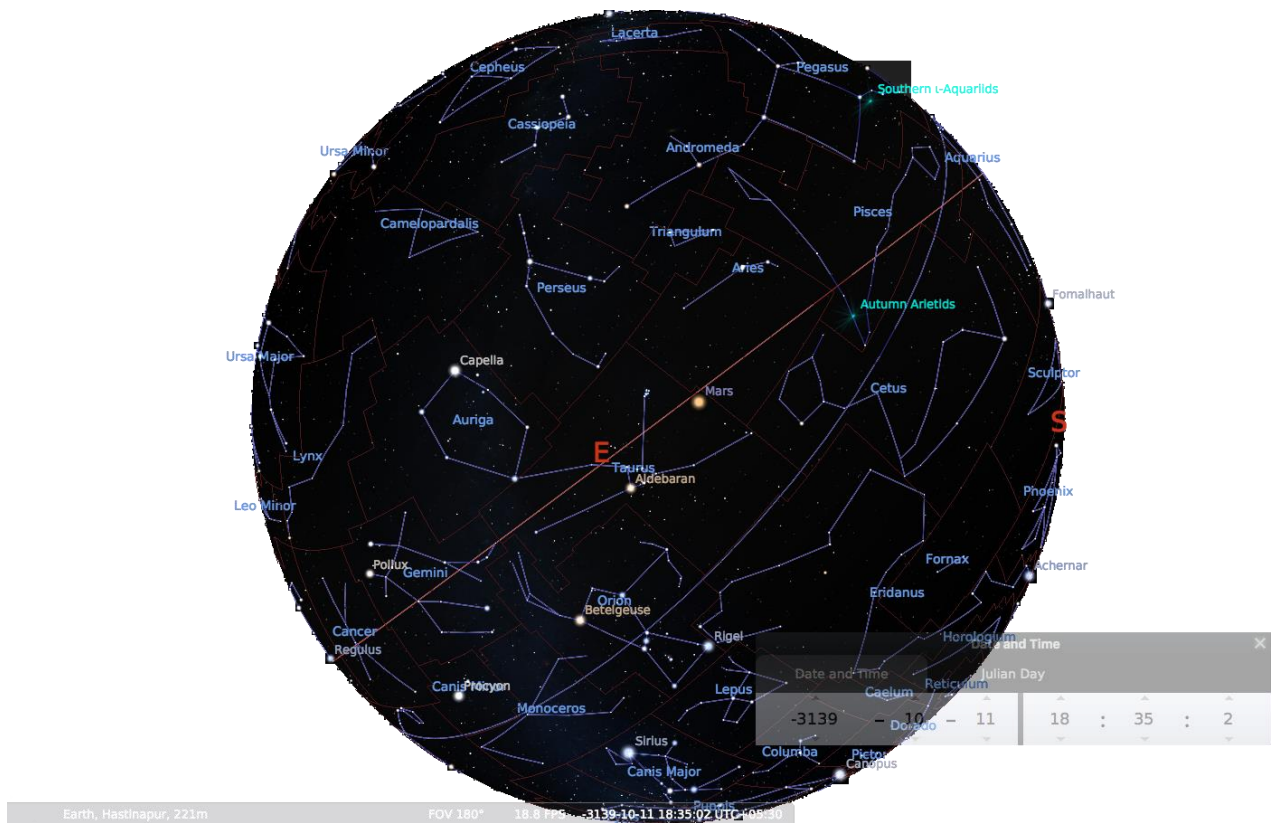
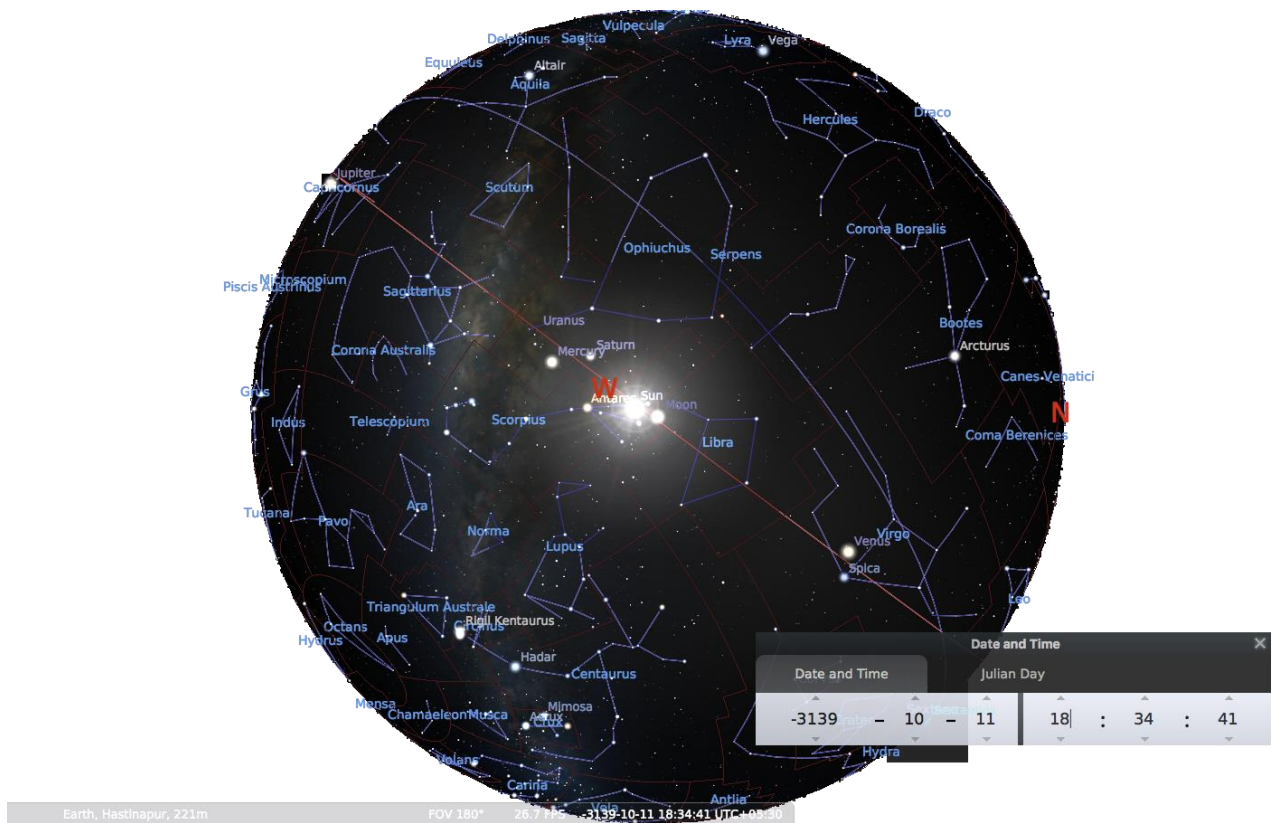
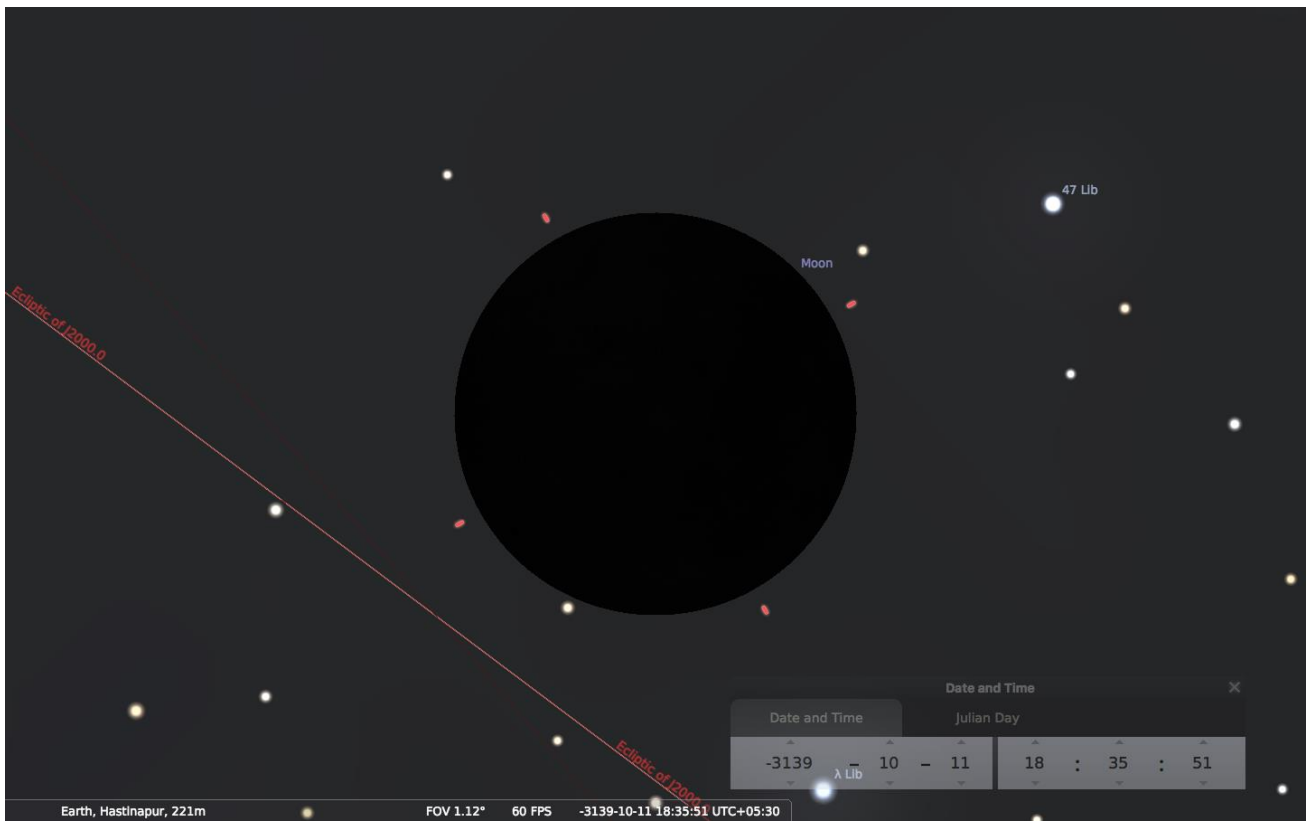


Figure 4: Planetary positions as seen in the sky six hours before the solar eclipse on 14th September, 3139 BC (18:30 hrs.) from Hastinapur (29°N, 77°E)





The magnified view of the Moon depicts that it was a no-Moon day. *Stellarium* otherwise does not clearly render the phases of the Moon in the normal view.

Corresponding view generated from *Stellarium 0.15.2* using NASA JPL DE431 ephemeris

This sky view is exclusive and it does not get repeated in/around 5561 BCE, 3067 BCE, in 1792 BCE or in 1478 BCE; for this reason the date of war in 3139 BC appears to be almost indisputable. There is lunar eclipse on first Kartik Purnima on 31 Aug 3139 BC followed by solar eclipse on 14th Sep 3139 BC, which had occurred on 13th lunar *tithi* after the lunar eclipse; all the above stated planetary positions could be observed six hours before the solar eclipse.

Eleven *Akshauhini Sena* of Duryodhana and *Seven Akshauhini Sena* of Yudhisthira had by now assembled in Kurukshetra. Duryodhana wanted to start the war in Pushya Nakshtra i.e. 3rd October, 3139 B.C. However, in the meantime in the month of Kartika, after the end of autumn season (Patjharh) and beginning of winter season (*Hemant Ritu*), Shri Krishana left Dwarka for Hastinapur on his last peace mission in Rewati Nakshtra (5/83/6-7). See the sky-view on 25th September 3139 B.C. at 6:20 AM from Dwarika (23° N, 69° E), in the month of Kartik –

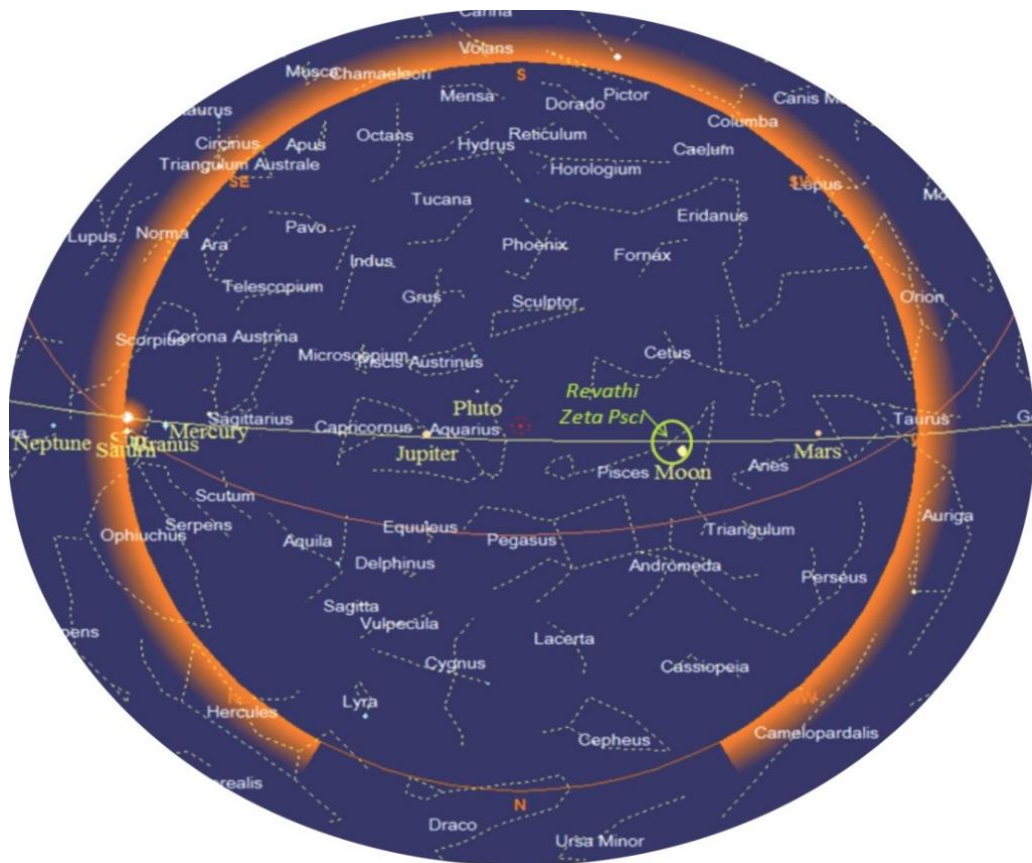
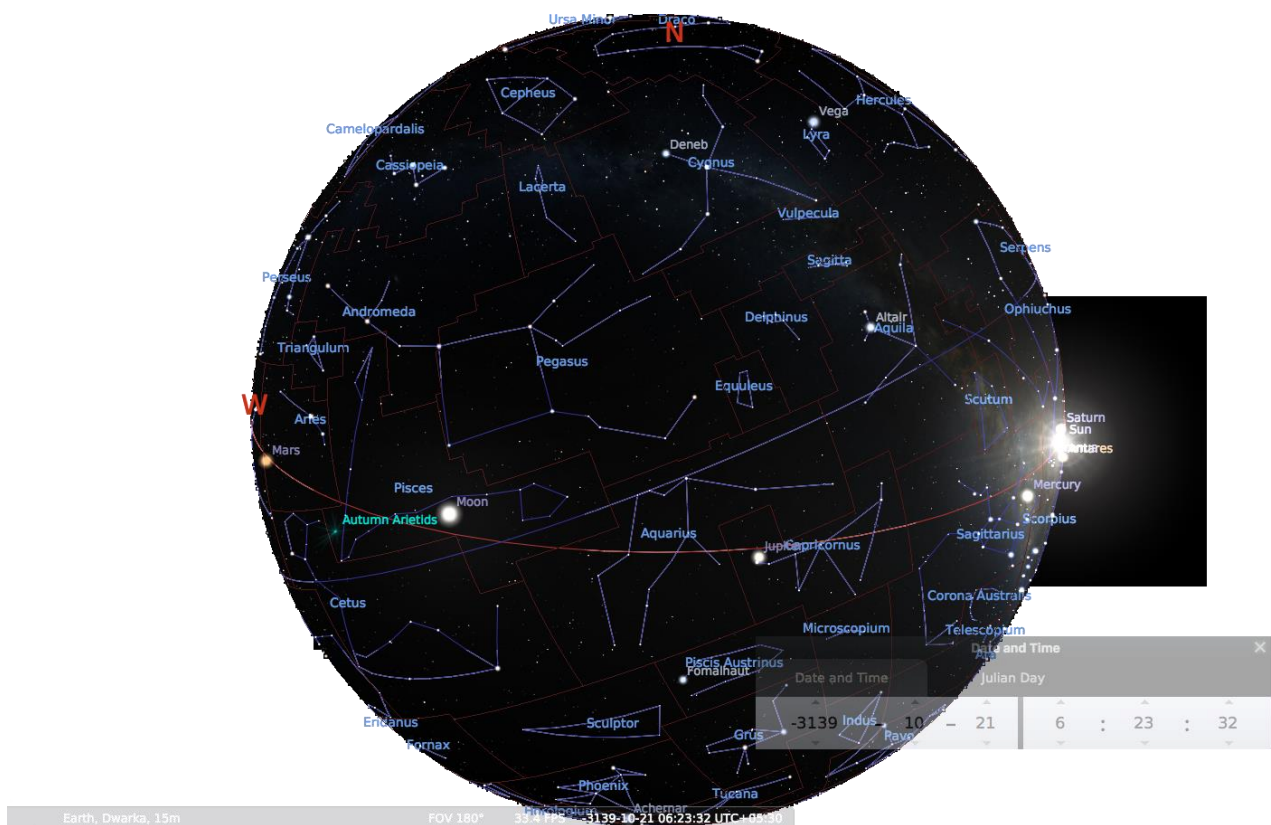


Figure 5: Sky-view on 25th September 3139 B.Cat 6:20 AM from Dwarika (23°N , 69°E), in the month of Kartik;



Corresponding view generated from *Stellarium 0.15.2* using NASA JPL DE431 ephemeris

After reaching Hastinapur, Lord Krishna tried to persuade Duryodhana to make peace with Pandavas but Duryodhana said, “I can sacrifice my life, my kingdom, my everything, but I can never live in peace with the Pandavas”. Consequently, the peace mission failed and the war was just going to begin. Not wanting to take sides, Balram left for 42 days of pilgrimage in *Pushya Nakshatra* (Moon in Cancer) i.e. on 3rd Oct. 3139 BC and was to come back after 42 days in *Shrawan nakshatra* (5/142/17-18 & 9/34/5-6). See the sky view of 3rd October, 3139 BC from Hastinapur (29° N, 77° E), when Moon was in Pushya nakshatra -

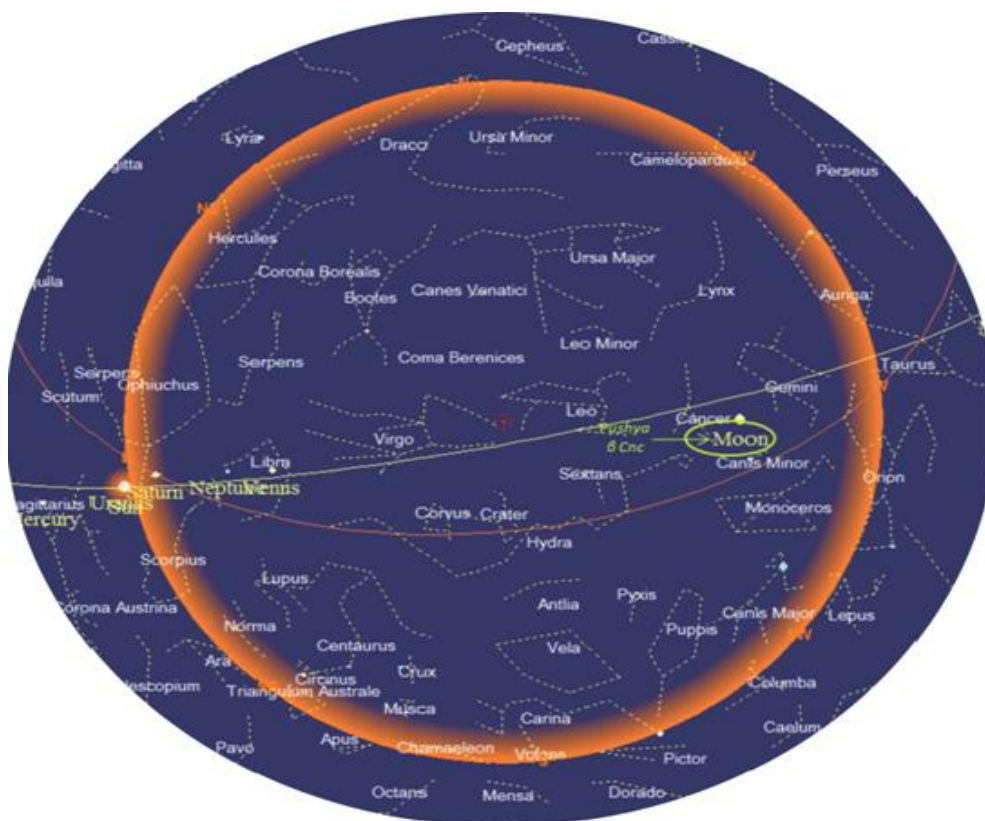
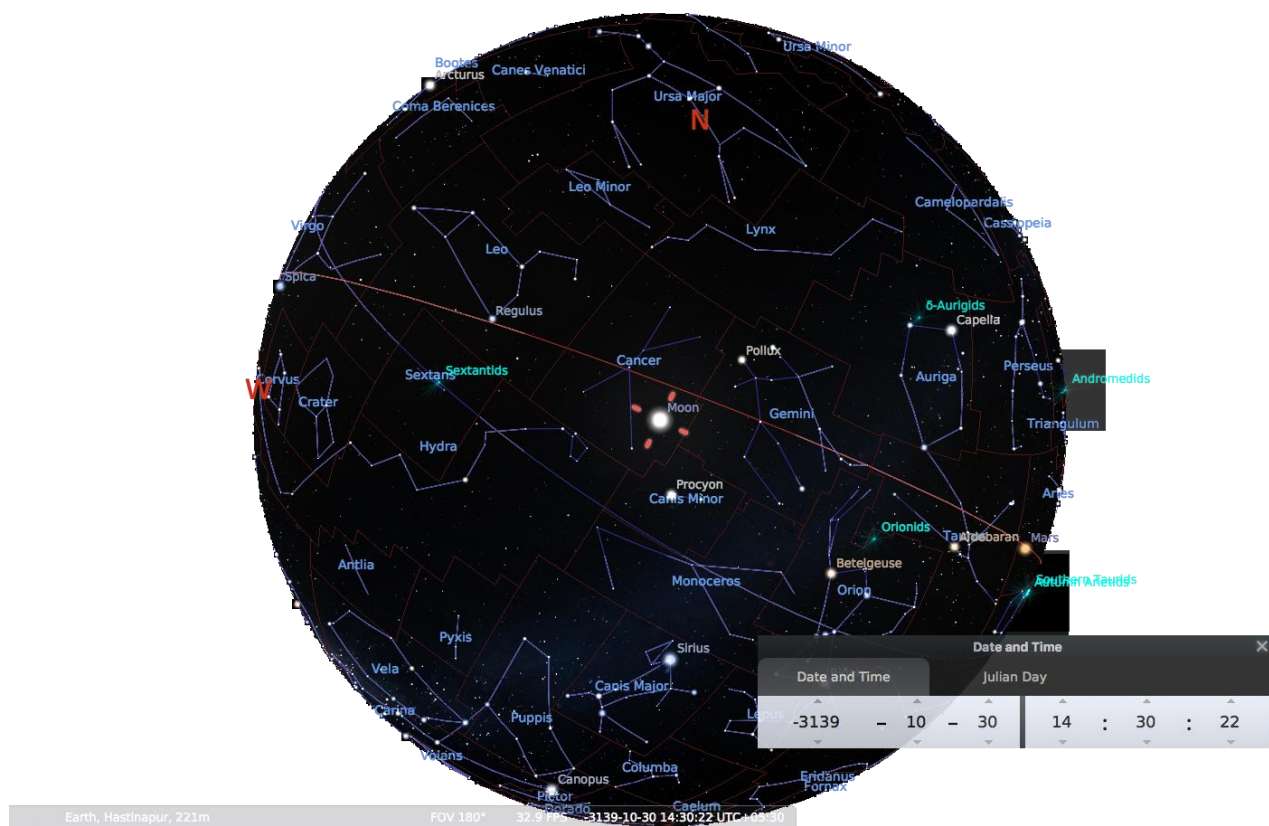


Figure 6: Sky view of 3rd October, 3139 BC from Hastinapur (29° N, 77° E), when Moon was in Pushya nakshatra



Corresponding view generated from *Stellarium 0.15.2* using NASA JPL DE431 ephemeris

The forces of Duryodhana and of Yudhisthira stood opposite to each other in Kurukshetra; ready to fight the most devastating war in the history of mankind! As suggested by Lord Krishna the war actually started on Jyeshtha Amavasaya day of Marghshish month, when Moon was near Jyeshtha in Scorpius (5/142/17-18), which happened to be on 13th October, 3139 B.C. See the sky-view of this historic day!

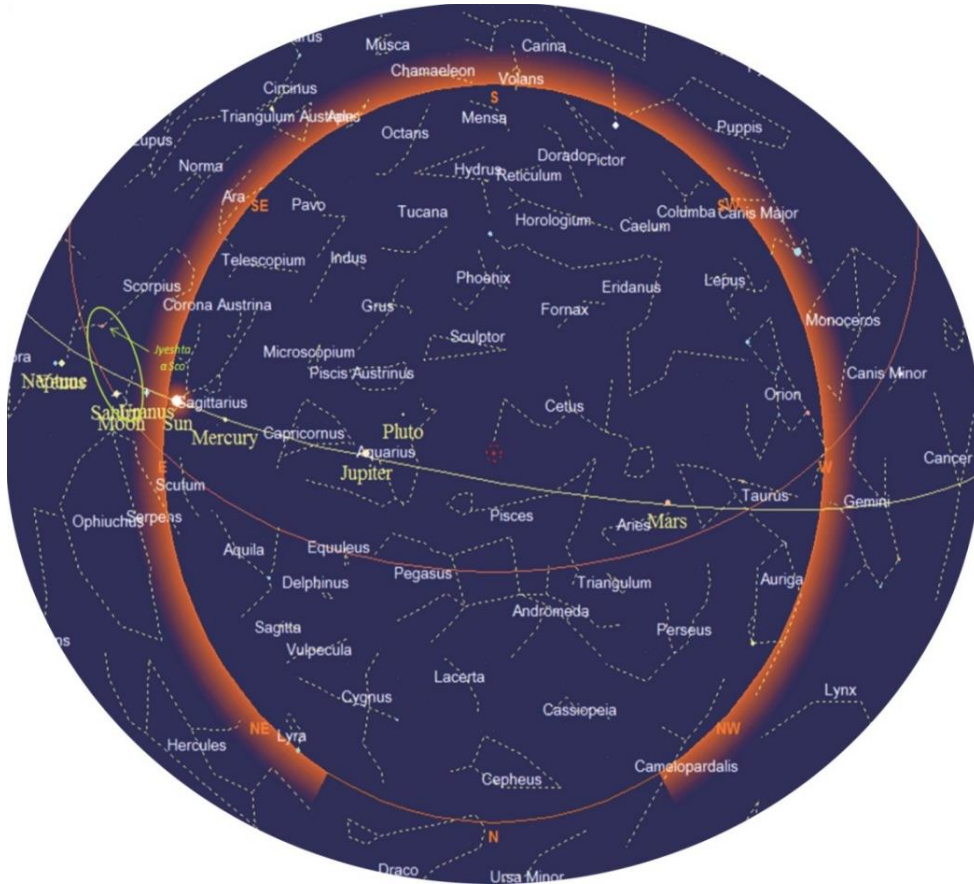
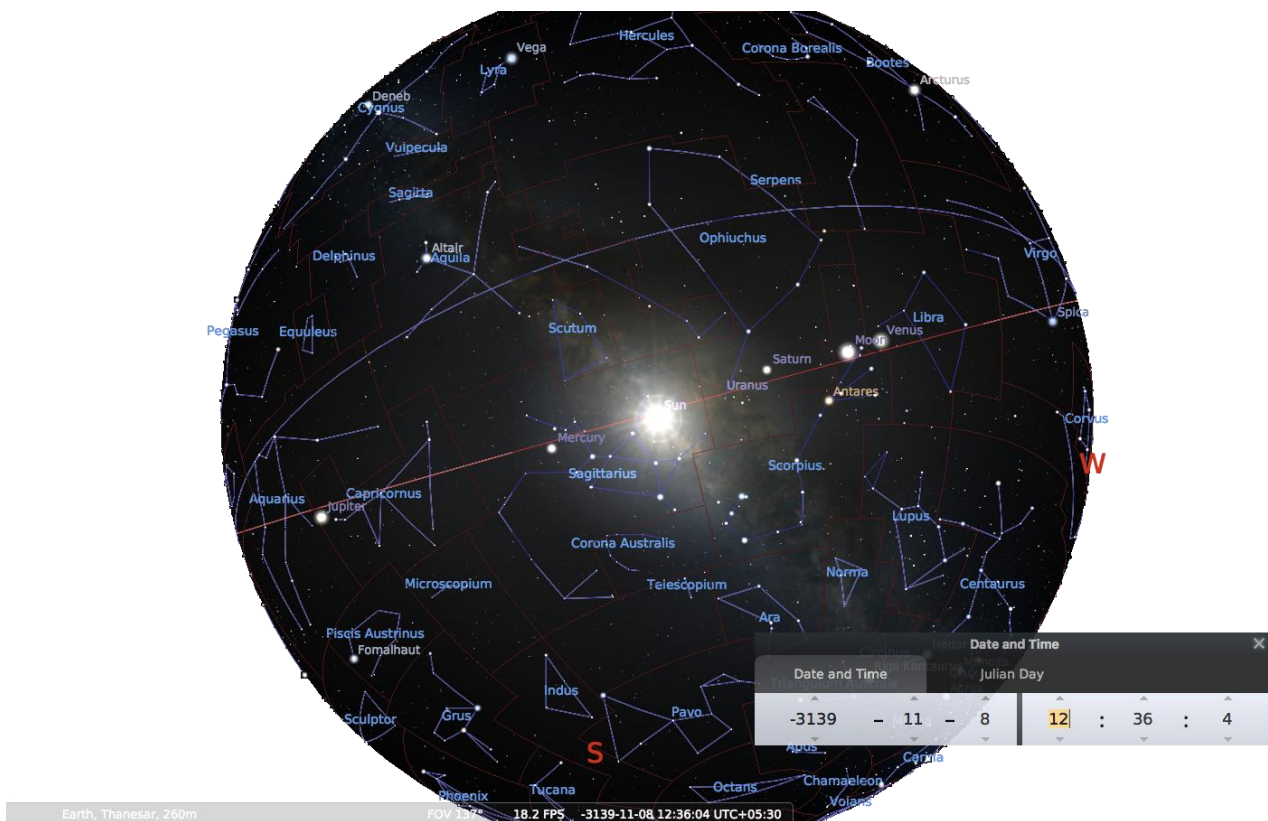


Figure 6: Sky-view on 13th October, 3139 B.C. - Amavasya day of Margshish month when Moon was near Jyeshtha in Scorpius. Mahabharat war started on this day.



Eleven divisions of Duryodhana's army and seven divisions of Yudhisthira's army stood face to face in the battle ground of Kurukshetra. Arjun requested Lord Krishna to take his chariot in the middle of Kuru and Pandu armies. After seeing his near and dear ones, like Bishama Pitamah and Guru Drona, Arjun broke down and abandoned his *GandivDhanush*. At this juncture, through Arjun, Lord Krishna passed on to the World the great philosophy of Bhagavad Gita. He asked Arjun to do his *Karma* by fighting the war in order to protect *Dharma*. He also added that the soul is eternal and indestructible, only the body is perishable.

The time of this *Gita-updesh* must have been sometime before the beginning of war on Margshish Amavasya on 13th October 3139 B.C. It was the month of *Margshish*, in winter season, when the Sun was in *Dakshinayan*(Southward movement). We Indians still wait for the assurance given by Shri Krishna during Gita Updesh -

yadā yadā hi dharmasya glānirbhavati bhārata |
abhyutthānamadharmaḥ tadātmānam sṛjāmyaham || (4.07)
paritrāṇāyasādhunāmvināśāya ca dukṛitām |
dharma-samsthāpanārthāyasambhavāmiyugēyuge || (4.08)

Through these words Lord Krishna had assured that whenever and wherever there is a decline of *Dharma* i.e. virtue and true religion languish whereas irreligion and sin predominate, O descendant of Bharat! I manifest myself in different eras to establish the superiority of *Dharma* by annihilating the miscreants and protecting the pious and the noble.

We still console ourselves at the death of a near and dear one by remembering what Lord Krishna had said –

nainam chindanti śāstrāṇi nainam dahati pāvakaḥ |
na cainam kledayantyāpo na śoṣayati mārutaḥ || (2.23)

Meaning thereby that the soul can never be cut into pieces by any weapons, nor can it be burnt by fire. The soul cannot be moistened/submerged by water, nor can it be withered by wind. *The soul is eternal and indestructible, it is only the body which perishes.*

karmanyaevadhikaraste ma phalesukadacana |
ma karma-phala-heturbhurmātesango 'stvakarmani ||2-47||

Meaning thereby that your concern is only with the actions, never with their fruits. Let not the fruits of actions be your motives. Perform your righteous duties without being attached to their results. Our belief system still centers around *karma yoga, jnana yoga and bhakti yoga*, the three paths out of which individual could make a choice.

However a very important question has to be answered here! If Shri Krishna had imparted Gita-updesh on Margashish Amavasya, why is Gita Jayanti celebrated on Margashish shukla ekadshi? The answer is available in the text of Mahabharat itself with all relevant details in chapter 13 of Bhishma Parva. Actually Sanjay is in the battlefield for first ten days. He saw Arjun's reluctance to fight against Bhishma Pitamah and Guru Dronacharya; he had heard from close range sermon of Bhagvadgita given by Lord Krishna to Arjun that he must perform his duty of fighting the war against unrighteousness. Sanjay is there in the battlefield till Bhishma Pitamah collapses on the tenth day. Thereafter, he came running to Dhritarashtra and started narrating to him the events relating to the war by first disclosing that "The son of Shantanu, Bhishma is killed. That foremost of all warriors, that grandfather of the Kurus today, lies on the bed of arrows." Thereafter he reproduces the entire Bhagvad Gita Sermon given by Lord Krishna to the great warrior Arjuna for the knowledge of Dhritrashtra and for the benefit of the whole world. This was naturally done on 11th day of waxing phase of Moon in the month of Margashish in 3139 BCE.

The war began on 13th October, 3139 B.C., with Bhishma Pitamah as the Commandar-in-chief of Duryodhana's army. Military science was much developed; a four division army comprising infantry, horse riders, elephant riders and rathis were built in nine steps. The weapons used included astras (missiles like chakras and arrows), sastras (swords, spears and axes), dandayuddha (mace and musala) and yantrayuddha (firearms like sataghni and bhusundi). Some such weapons, which are considered to be more than 5000 years old, have been found during excavations in the relevant geographic locations. Every day there used to be different kind of battle-array. At least eighteen types of vyuha-rachnas are described in the Epic.

Under the command of Bhishma Pitamah, Kuru army fought fierce battles and killed very large number of warriors of Pandava's side during first nine days. The Pandavas visited Bhishma Pitamah by night on ninth day and sought his blessings. He advised them to place Shikhandi in the front line as Bhishma would not attack a woman. On the 10th day, placing Shikhandi in front of him, Arjun succeeded in showering thousands of arrows on Bhishma Pitamah, which practically put him on the bed of arrows. Bhishma Pitamah was now waiting for the beginning of Utrayan for his *mahaprayan*.

On 11th day of war, Guru Drona took over as the commander-in-chief of Duryodhana's forces. Through his clever *chakravyuh formation* (circular array), he succeeded in killing Abhimanyu when Jaidrath engaged Arjun in a diversionary battle far away. However, on the 15th day Dhrishtadyumna succeeded in killing Dronacharya by severing his head. On 16th day Karna took over as the commander-in-chief of Duryodhana's forces but on the 17th day of war, the wheel of Karna's chariot got stuck in the mud. Just at that time Arjun shot an arrow which instantly killed Karna in the battlefield.

On the 18th day Shalya came to fight as the commander-in-chief of Duryodhan's Kuru forces but got killed at the hands of Yudhisthira by mid day. Thus on the 18th day the war came to an end but Duryodhana hid himself in the waters of Dvaipayana Lake; he was making plans to take revenge from Pandavas after his recovery. The Pandavas launched the search operation; after several attempts, they finally succeeded in locating him on the 14th day. On being challenged by Pandavas, Duryodhana came out of the lake to fight mace battle with Bhim. Just at that time Balram came there in Shrawan Nakshatra after 42 days of pilgrimage and he desired to see the mace battle between his two disciples (Shalya Parva 9/34/5-7). See the sky-view from Kurukshetra (30° N 77° E) of 14th November, 3139 B.C, when Moon was near Shrawan in Capricornus.

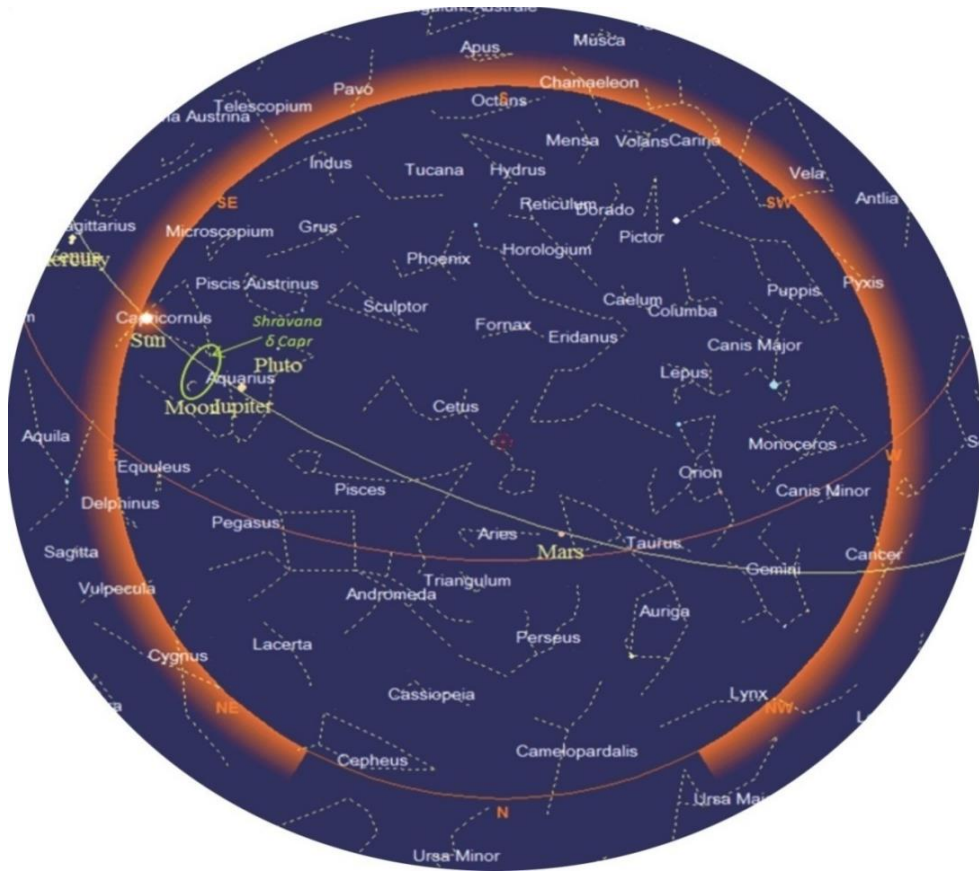
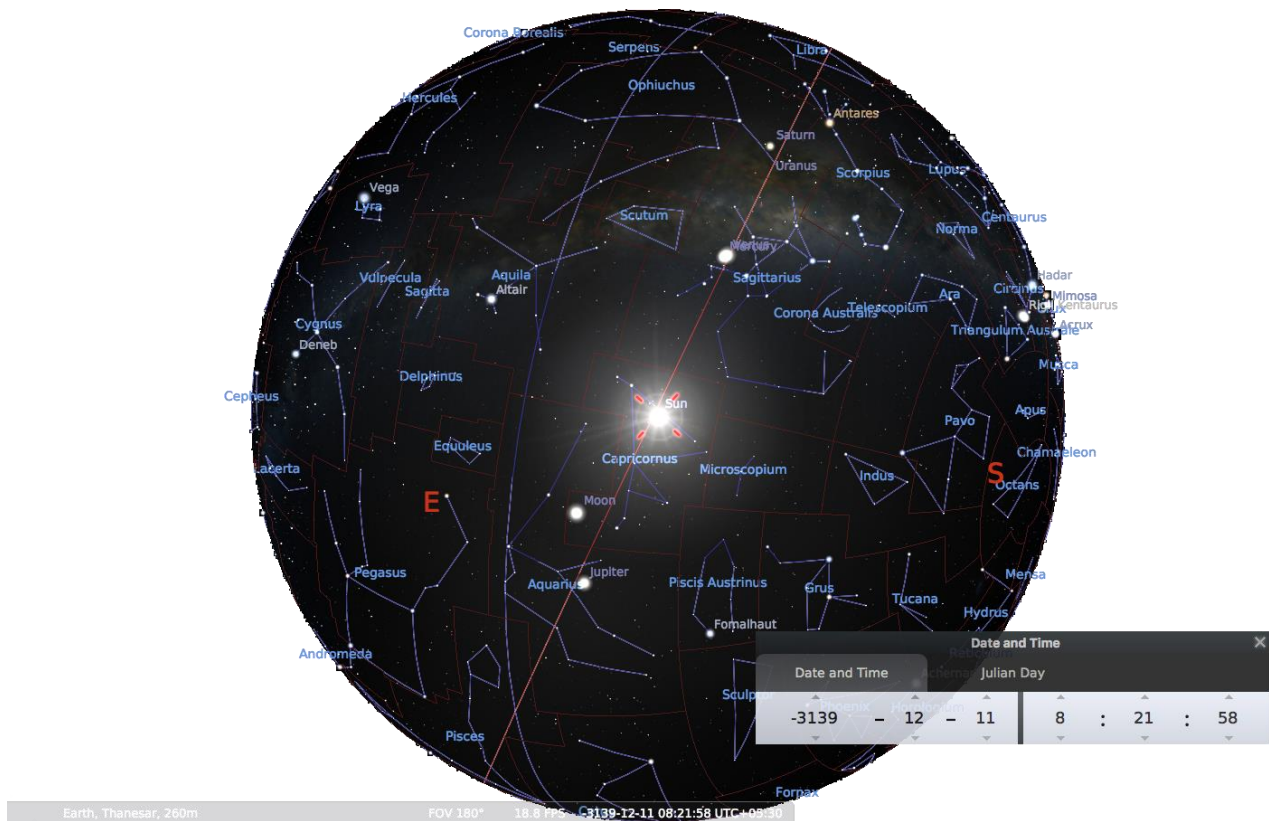


Figure 7: sky-view from Kurukshetra (30° N 77° E) of 14th November, 3139 B.C, when Moon was near Shrawan in Capricornus



On being hit by Bhim on his thighs, Duryodhana collapsed and Pandavas went away leaving him behind in pain. Kritverma, Kripacharya and Ashvatthama were grief-stricken looking at the plight of Duryodhana. They decided to take revenge from Pandavas; In the middle of night when the entire Pandavasena and all the five sons of Draupadi were in deep slumber, they killed Dhrishtadyumna and five sons of Draupadi by striking them with their shastras. Thereafter, they killed all other remaining warriors by putting the camp on fire. Ashvatthama even tried to destroy the womb of Uttara but Lord Krishana saved her pregnancy. This child in Uttara's womb, named Parikshit, later on became the king of Hastinapur when Pandavas went for *Swargarohan*.

Yudhishtira reported the death toll at six million during this dreadful war. The women were crying piteously after losing their husbands, fathers, brothers and sons (M.B. – StriParva) According to one study conducted by Estonian Bio-Centre, Tartu, around 5000 years back the ratio of men vis-à-vis the women went down to 1:4.

Let us just have one look at the map which displays the geographic locations of kingdoms and tribes which had participated in Mahabharat War. Most of the North Western kingdoms of Indian sub-continent fought on behalf of Kauravas; whereas those from South Eastern areas participated in the war to support the Pandavas.

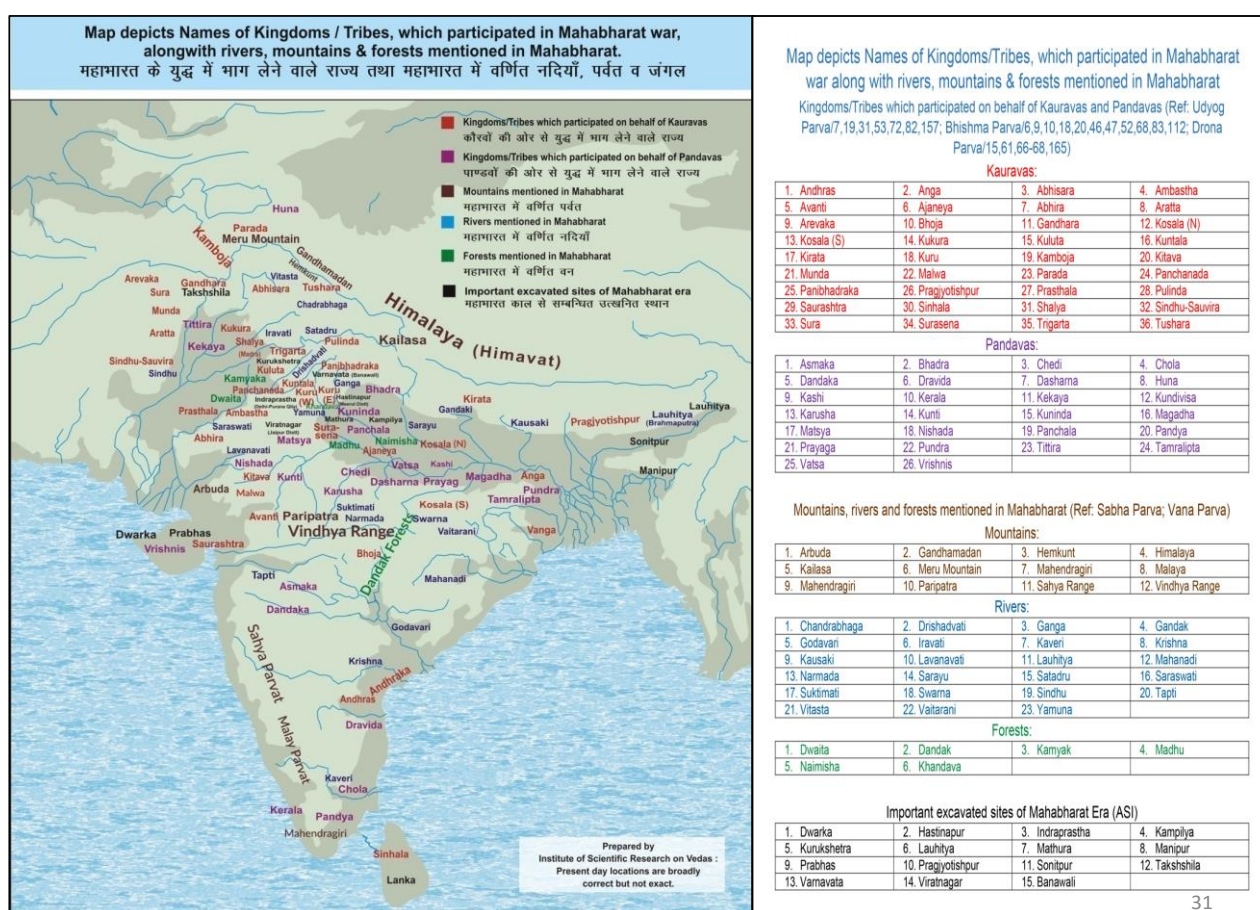
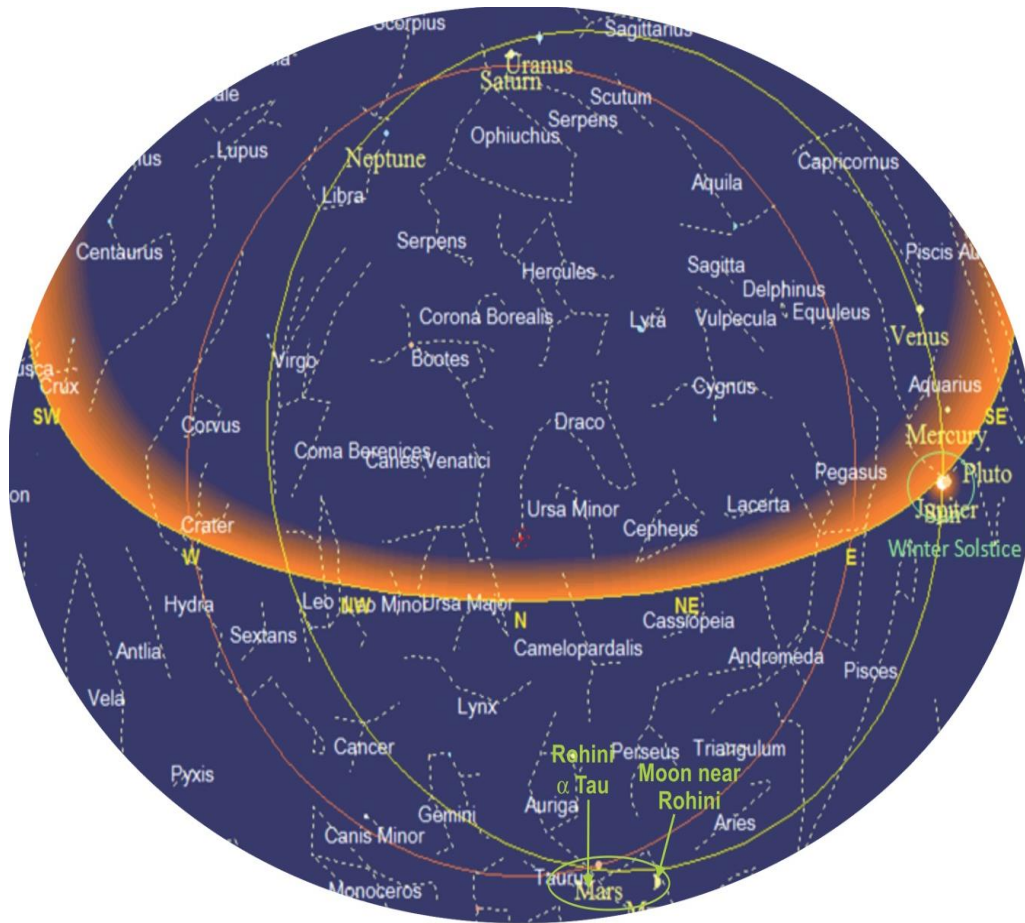


Figure 8: Map depicting kingdoms which participated in Mahabharat War

After the end of Mahabharat War, Yudhishtira was coronated as the king of Hastinapur. Grief-stricken, he was very reluctant to accept the kingship. He performed the funeral rites of the deceased kings and warriors and took several steps to console the grieving females.

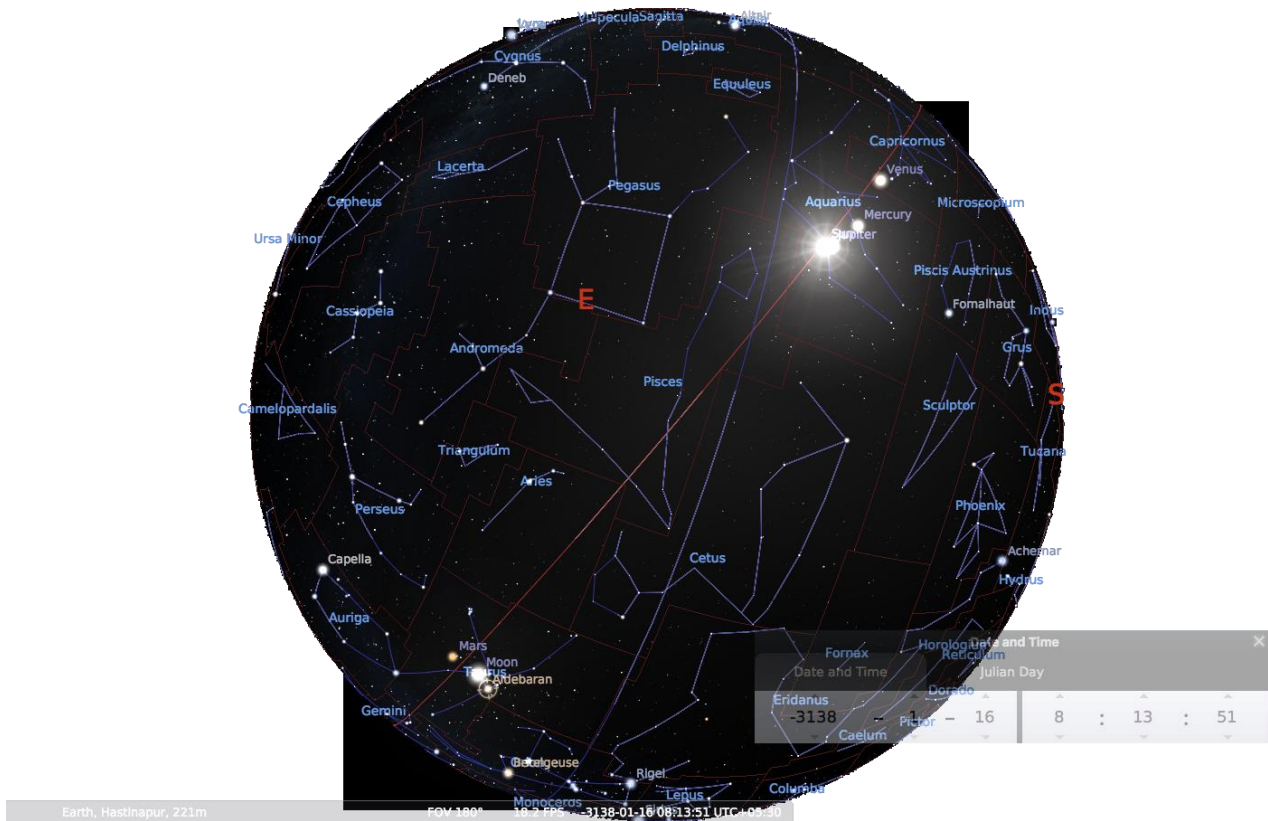
Lying on his bed of arrows, Bhishma Pitamah was waiting for the Sun to begin its Northward journey (Uttarayan). That day arrived on 19th December 3139 B.C. when it was Saptmi of the lighted fortnight in the month of Magha and moon was in Rohini Nakshtra (in Taurus), as per the references in AnushasanaParva(13/167/26-28) and in Shanti parva

(12/47/3) of Mahabharat. See the Sky view from Hastinapur (29° N, 77° E) of 19th December, 3139 BC at 7.20 AM, when Sun had just started its northwards journey; Moon was near Rohini and it was Magh Shukla Saptami. This is also a unique date and sky-view which does not get repeated in / around 5561 BCE, 3067 BCE, 1792 BCE or 1478 BCE.



19 December, 3139 BC, 7:20 hrs., Hastinapur, 29°N, 77°E; Winter Solstice

Figure 9: Sky view from Hastinapur (29°N, 77°E) of 19th December, 3139 BC at 7.20 AM, when Sun had just started its northwards journey; Moon was near Rohini and it was Magh Shukla Saptami

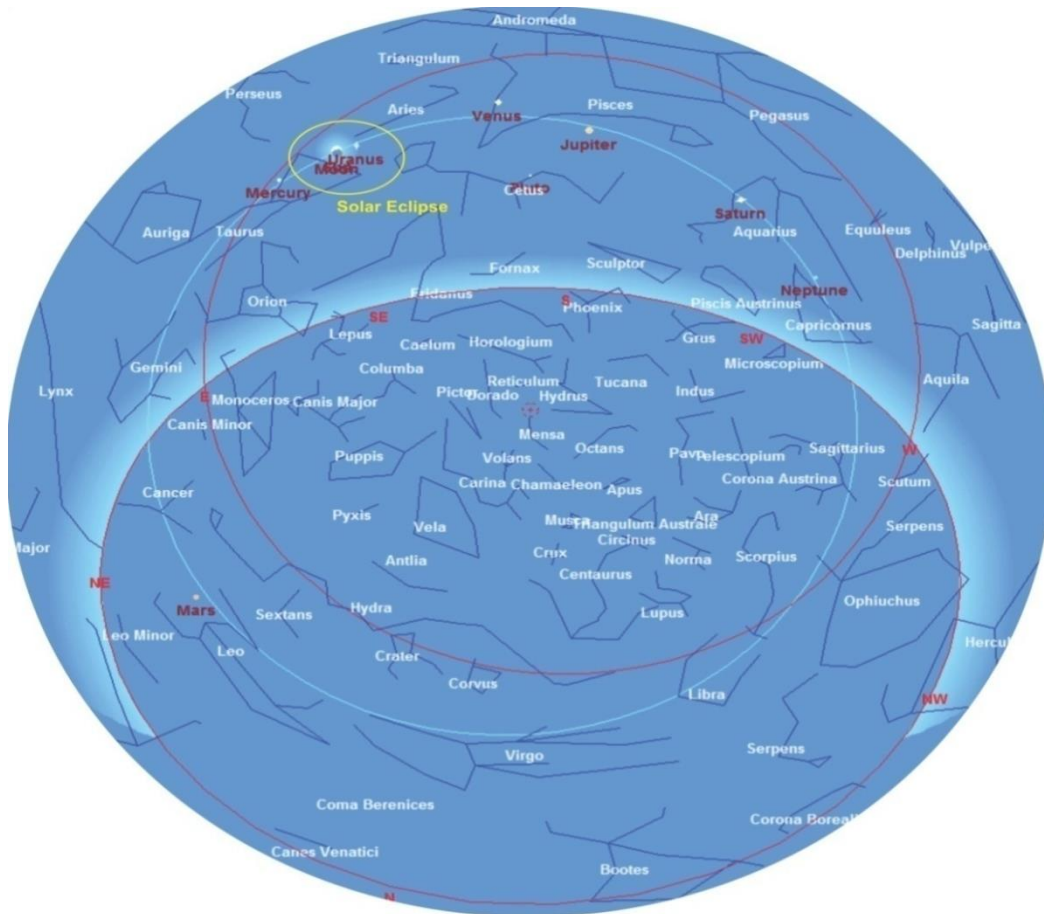


Corresponding view generated from *Stellarium 0.15.2* using NASA JPL DE431 ephemeris

King Yudhishtira arrived on Magh Shukla Saptami and bowed before Bhishma Pitamah who enlightened him about the basic principles of Rajdharma, Mokshdharma, Daandharma and Shantidharma. Thereafter every surviving member of the family met Pitamah. The very next day i.e. on 20th December 3139 B.C., Bhishma left for his heavenly abode and this day is celebrated as BhishmaAsthmi till date.

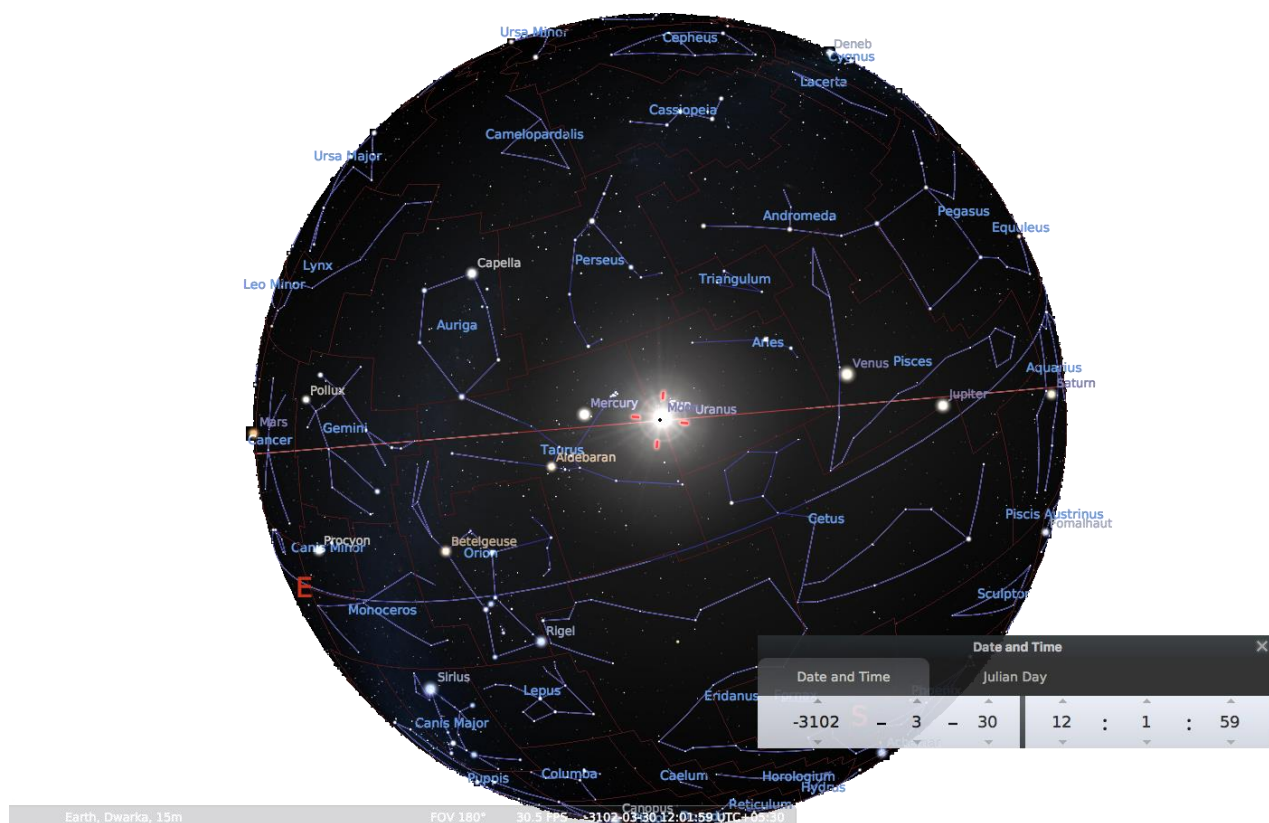
Thereafter, Yudhishtira got fully involved in the welfare of the *Praja*. After some time he conducted Ashvamedha Yagya and gave huge amount of wealth in charity. Lord Krishna had also got fed up with wars and battles, therefore, was in search of peace. So he went and settled in Dwarika along with Yadavas, Gopis and war-widows.

36 years were spent in peace but thereafter the signs of destruction all around again became visible. Around that time, a solar eclipse was seen from Dwarika which also occurred on an Amavasya on 13th lunar tithi after Purnima as per references in the MausalaParva. See the solar eclipse of 3rd March 3102 B.C. (at 10:30 AM) from Dwarika (23° N, 69° E), which could be seen right from the time of Sunrise to Sunset.



Solar eclipse March 3, 3102 BC, 10:30 hrs., Dwarka <22°N, 69°E>

Figure 10: solar eclipse of 3rd March 3102 B.C. (at 10:30 AM) from Dwarika (23°N, 69°E), which could be seen right from the time of Sunrise to Sunset



Corresponding view generated from *Stellarium 0.15.2* using NASA JPL DE431 ephemeris

Thereafter, there was destruction all around in Dwarka. Yaduvanshis were killing other Yaduvanshis. Balraam had died by drowning in the sea, Vasudeva also left for his heavenly abode; Yadav race was at the verge of extinction. After some time the entire city of Dwarka was devoured by the Sea. On receipt of a message from Lord Krishna, Arjun had left for Dwarka. However, in the meantime an arrow mistakenly shot by a hunter pierced at the heel of Lord Krishna, who thereafter left for celestial region.

Arjun performed the last rites of many kinsmen and took the survivors along with him. He made Vajra the king of Indraprastha and settled other survivors in smaller kingdoms. After hearing about the destruction in Dwarka and about Mahapriyan of Lord Krishna, Yudhishthira decided to renounce the world. He coronated Prikshit, son of Uttara and Abhimanyu, as the king of Hastinapur. After donating huge amount of wealth in charity, he left for Swargarohan accompanied by his four brothers and Draupadi.

Around this time a spectacular assemblage of Moon and five bright planets along with the Sun was seen on the eastern horizon in Aries and Pisces on 22nd January, 3101 B.C. This striking sight at dawn must have come down as a legend associated with the beginning of Kali Era i.e. Kaliyug –

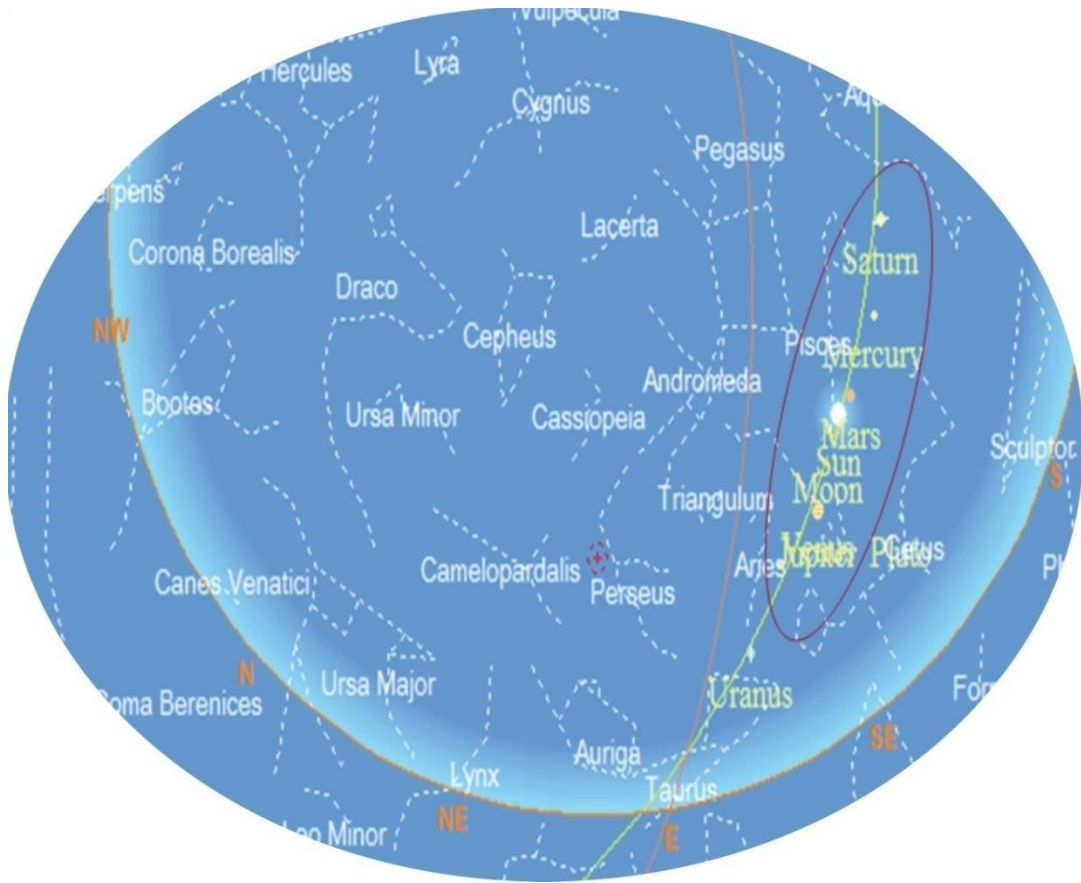
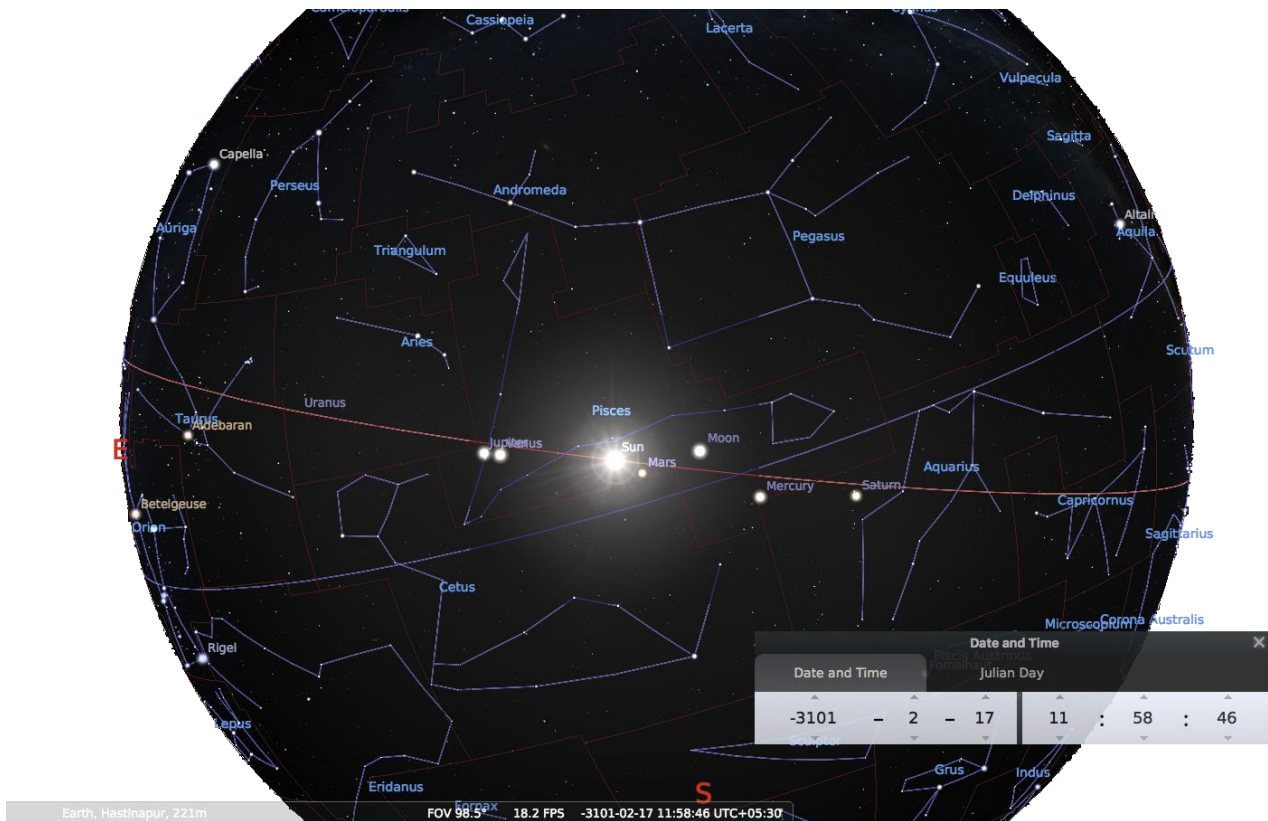


Figure 11: Sky-view on 22nd January, 3101 B.C. when assemblage of Moon and five bright planets along with the Sun was seen on the eastern horizon in Aries and Pisces associated with the beginning of Kali Era or Kalyug



Let us have one look again at the map of *Bharatvarsha* of Mahabharat times, given above. Bharatvarsha was a nation with defined boundaries 5000 years back, when its territories included modern day India, Pakistan, Afghanistan, Turkmenistan, Tibet, Bangla-Desh etc. Excavations have been carried out in many of the principalities and kingdoms plotted in this Map, which had participated in the Great War. From the archaeological evidence from these sites, it has been concluded on the basis of C-14 dating that these political principalities and kingdoms were well established by the second millennium BCE, though the settlements started at many of these sites much earlier; for example -

- Sarai Khola and Pushkalavati (Charsadda) in **Gandhara**,
- BMAC and Gandhara Grave Culture sites in **Kamboja**;
- Bairat, Gilund and Ojiana in **Matsya**
- Mathura, Sonkh and Noh in **Surasena**
- Hastinapura, Hulas and Alamgirpur in **Kuru**
- Ahichchhatra, Atranjikhhera, Kanno and Kampilya in **Panchala**
- Ujjain, Kayatha, Nagda, Ahar in **Avanti**
- Eran and Tripuri in **Chedi**
- Kaushambi and Jhusi in **Vatsa**
- Rajghat-Sarai Mohana in **Kasi**
- Ayodhya, Sravasti, Lahuradewa, Siswania in **Kosala**
- Rajdhani, Narhan, Sohgaora in **Malla**
- Rajgir, Chirand and Juafardih (Nalanda) in **Magadha**
- Vaisali and LauriyaNandangarh in **Vriji**
- Champa and Oriup in **Anga**
- Adam and Inamgaon in **Asmaka**

Kingdom of Kurus i.e. Hastinapur was near Upper Ganga plains, Krishna's Mathura was on the banks of Yamuna and war was fought in Kurukshetra of Sarasvati region. The excavations carried out in these areas have also established the direct connection of Mahabharat references with 3000 BC. These include excavations at Rakhigarhi, *Bhirrana* and *Kunal* in the Sarasvati valley and Lahuradeva and Jhusi etc. in Ganga region, from where terracotta, beads, jewellery, metals, weapons etc. have been excavated, the radio-metric dates of which go back to the time bracket ranging between 5000 - 2500 BC.

See pottery, mirror, necklace, silver and beads excavated from Rakhigarhi in Saravati and Drishadvati belt near Hissar of modern day Haryana –



Early *Harappan* pottery, copper mirror, beads' necklaces, seals and silver ornaments excavated from Rakhigarhi, 5000 - 2500 BC

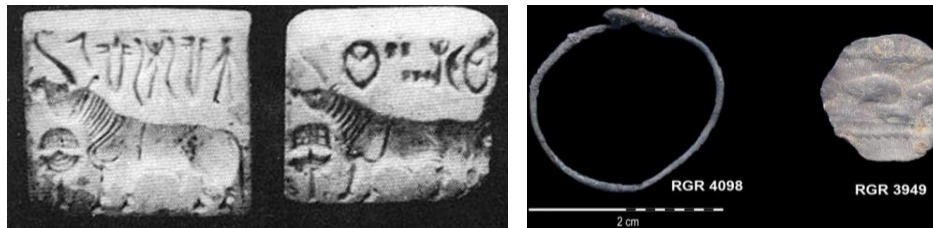


Figure 12: Pottery, mirror, necklace, silver and beads excavated from Rakhigarhi in Saravati and Drishadvati belt near Hissar of modern day Haryana



Copper Bangles, beads, Lapis Lazuli and Shell necklaces, copper arrowheads, Chert blades and Core from Bhirrana, 7000 - 2500 BC



Figure 13: Arrow heads, lapis lazuli, bangles and beads etc. excavated from Bhirrana in the area adjacent to Rakhigarhi

In fact the entire region, at multiple sites, has yielded similar kind of artefacts, which are dated more than 5000 years old. Have a look at those excavated from Kunal, near Kurukshetra -



Terracotta pottery painted with two colours, Silver spiralled bangles, Painted terracotta pitcher, Silver necklace and Copper arrowheads from Kunal, Haryana, 5000 - 2500 BC

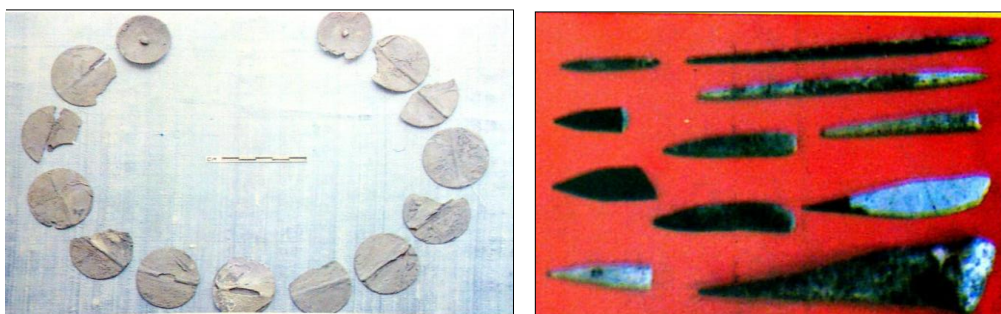
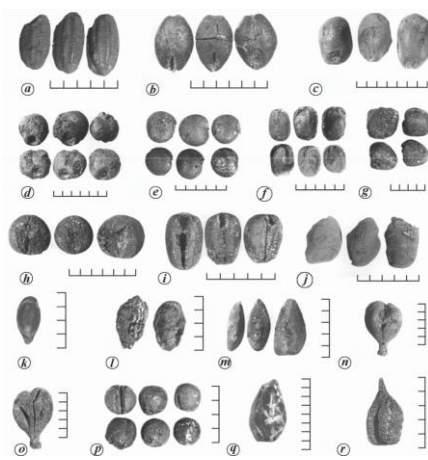


Figure 14: 5000 year old artefacts excavated from Kunal near Kurukshetra

In middle Ganga Plains, the most important excavated sites include Koldihwa, Lahuradeva, Jhusi, Tokwa and Hetapatti etc., which have revealed an uninterrupted history of cultural development in this region from 7000 BC till date. More than 5000 year old plants have been found in these areas, many of which find reference in Mahabharat -

Crops in Middle Ganga Plain / मध्य गंगा मैदान की फसलें

Koldihwa (6500 BC) कोल्डिहवा	Lahuradeva (7000 BC)	Lahuradeva (5000-3000 BC) लहुरादेवा	Jhusi (7000-6000 BC) झूसी
<i>Oryza sativa</i> (Cultivated rice) कृषि-धान	<i>Oryza rufipogon</i> (Wild rice) and <i>Oryza sativa</i> (Cultivated rice)	<i>Oryza sativa</i> (rice); <i>Triticum aestivum</i> (bread-wheat); <i>Triticum sphaero-coccum</i> (dwarf-wheat); <i>Hordeum vulgare</i> (hulled barley); Lentil (<i>Lens culinaris</i>); Nuts of mugawort	<i>Oryza sativa</i> (rice) <i>Hordeum vulgare</i> (hulled barley); <i>Triticum aestivum</i> (bread-wheat); <i>Triticum sphaero-coccum</i> (dwarf-wheat)



Crop remains from Jhusi 7000-6000 BC

a, *Oryza sativa* (rice); b, *Hordeum vulgare* (hulled barley); c, *Triticum aestivum* (bread-wheat); d, *Triticum sphaero-coccum* (dwarf-wheat); e, *Lens culinaris* (lentil); f, *Vigna radiata* cotyledons (green-gram); g, *Lathyrus sativus* (grass-pea); h, *Pisum arvense* (field-pea); i, *Vigna radiata* (green-gram); j, *Macrotyloma uniflorum* (horse-gram); k, *Sesamum indicum* (sesame); l, *Linum usitatissimum* (linseed); m, *Emblia officinalis* (anwala); n, *Vitis vinifera* (grape) showing chalazal scar on dorsal side; o, *Vitis vinifera* (grape) showing two narrow and deep furrows on ventral side; p, *Vicia sativa* (common vetch); q, r, *Coix lachryma-jobi* (Job's tear) (scale in mm) (after Pokharia et al. 2009: 564)

From a to r: धान, जौ, गेहूँ, दाल, हरा चना, मटर, हरा चना, घुड़ चना, तिल, आंवला, अंगूर, स्वीट पी, घास मनका

Figure 15: Crop remains from 7000-6000 B.C. found in Middle Ganga Plains

In view of the above said scientific evidences, we can safely conclude that Mahabharat refers to the historical events of the remote past. The Mahabharat war was actually fought about 5150 years back in 3139 BC. Just before that war, Shri Krishna had actually passed on to the world, through the instrumentality of Arjun, that *adbhut jnana* of Bhagavadgita.

Keeping in mind the discriminations and distortions prevailing in India during modern times, let us remember and follow what Lord Krishna said in 4/13 of Bhagavadgita –

cāturvarṇyaṃ mayā sṛṣṭaṃ guṇakarmavibhāgaśaḥ |
tasya kartāramapi māṃ viddhyakartāramavyayam || (4.13)

Lord Krishna said that four *varnas* had been created by God Almighty, based on the *guna* i.e. qualities and *karma* i.e. actions/functions of individuals. Thus the four *varnas* had nothing to do with the birth or with the modern day caste system. Dronacharya was a Brahmin but fought like a kshtriya; Karna was discriminated against by Bhishma but befriended by Kuru king Duryodhana. Eklavya was discriminated against by Drona but was mentored by Jarasandha. Sudama was a Brahmin but was very poor, whereas Drona was a Brahmin but humiliated by King Drupada. Thus discrimination was not caste-based but more complex, which reflected the selfish motives and baser or nobler instincts of individuals.

However over the years these four *varnas* got linked to birth and gave rise to caste-system. Slowly social evils like untouchability, inequality, caste-based discrimination started taking deep roots, which have played havoc with our country and its social fabric. To remove these vices, we shall have to revert back to the true teachings contained in our ancient Vedas and Epics. We shall have to cleanse these from the distortions, which were interpolated subsequently after India was enslaved by external forces. Let us all resolve to build India in which no one is discriminated against and all are treated with love and respect.

In the words of Dr. A P J Abdul Kalam, “In India the core culture goes beyond time. It precedes the arrival of Islam; it precedes the arrival of Christianity.....It is when we accept India in all its splendid glory that, with a shared past as a base, we can look forward to a shared future of peace and prosperity, of creation and abundance. Our past is there with us forever. It has to be nurtured in good faith, not destroyed in exercises of political one-upmanship”.

Note on References

No references have been given within the text of this paper because no extracts or pictures have been taken from any other book. This paper contains the sky-views of astronomical references in Mahabharat, which have been generated making use of Planetarium software. The pictures of excavated artefacts have been taken from the reports published by Archaeological Survey of India and Indian Archaeology Society. However, the names of authors of books and articles who might have influenced the thought process behind this paper are listed below with gratitude.

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B K Bhadra	K S Valdiya	S P Gupta
B Narhari Achar	K V R S Murty	S R Rao
B P Radhakrishna	K V Krishna Murthy	S Sorensen
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Ishwar Chandra Sharma	R S Bisht	Many more